olume XXIII.
Number I.

JULY, 1902.

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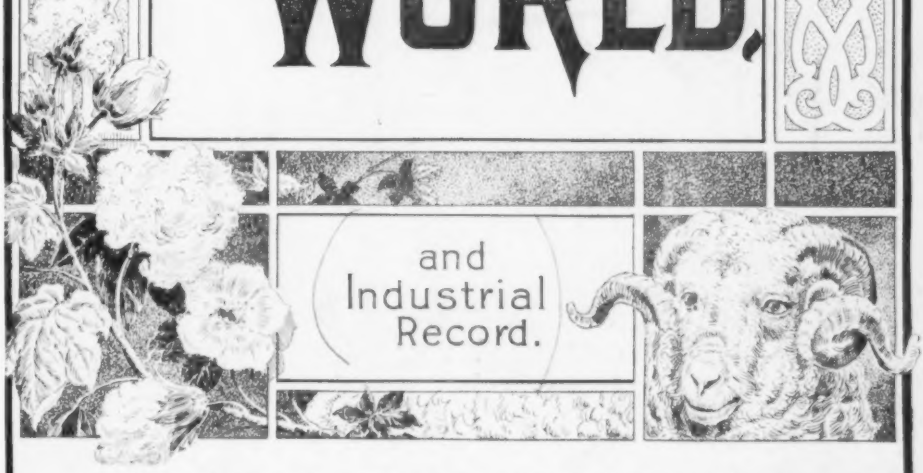
PERIODICAL DIV.

TEXTILE WORLD,



and Industrial Record.

The Textile World Official Directory

FOR 1902 NOW READY.

Office Edition $2.50. Traveler's Edition $2.00.

See Page 154.

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Mfrs. of the Barber Knotter.

MESSRS. GUILD & LORD. June 18, 1902.

GENTLEMEN:—Referring to your inquiry as to number of Textile World Directories we shall need this year, will want five (5) of the pocket (traveler's) edition and two (2) office edition. As I have told you before, after making an extensive trial of the other directories, Barber & Colman have come to the conclusion that the Textile World's Directory is very much superior to any other.

Yours very truly,
(Signed) ROBERT C. WEBSTER, Manager.

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GUILD & LORD.
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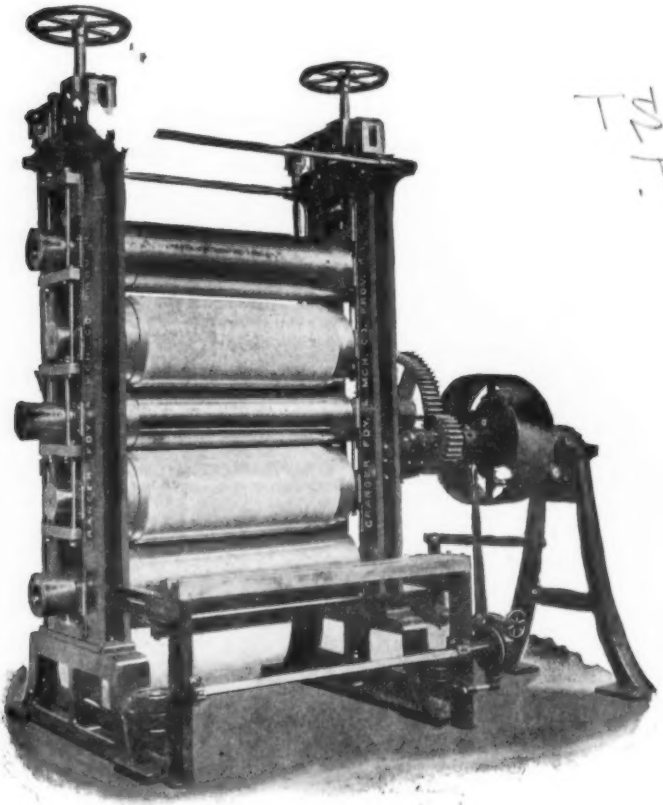
Bleaching, Dyeing, Drying,

And Finishing Machinery.



TS1300
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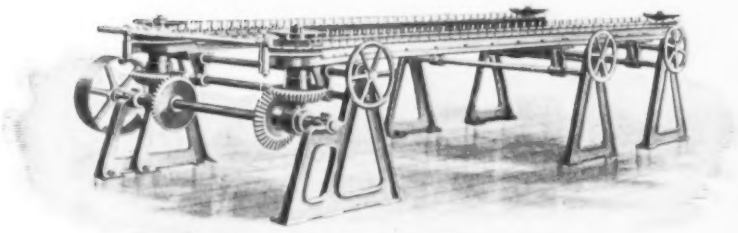
TENTERING MACHINES,
MERCERIZING MACHINES.

Granger Foundry and Machine Co.

PROVIDENCE, R. I.

Bleaching, Printing, Dyeing and Finishing Machinery

For Textile Fabr[illegible]



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H. W. BUTTERWORTH & SONS CO.,

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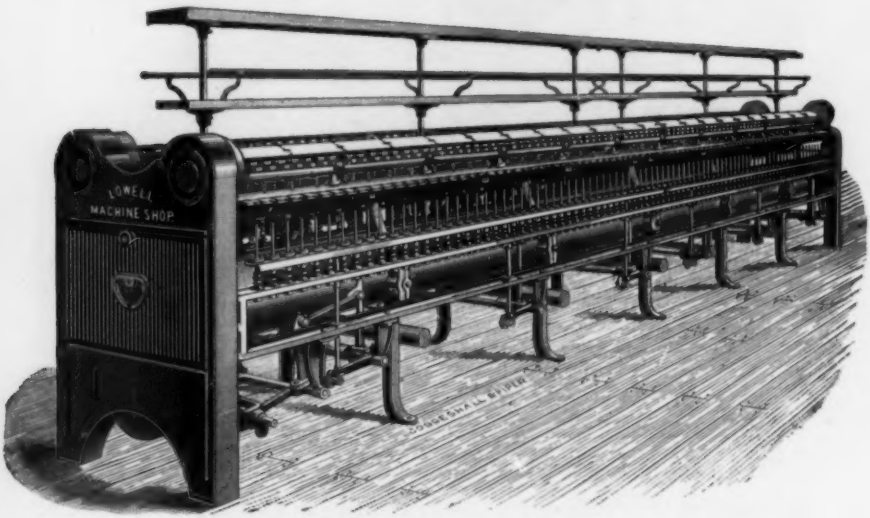
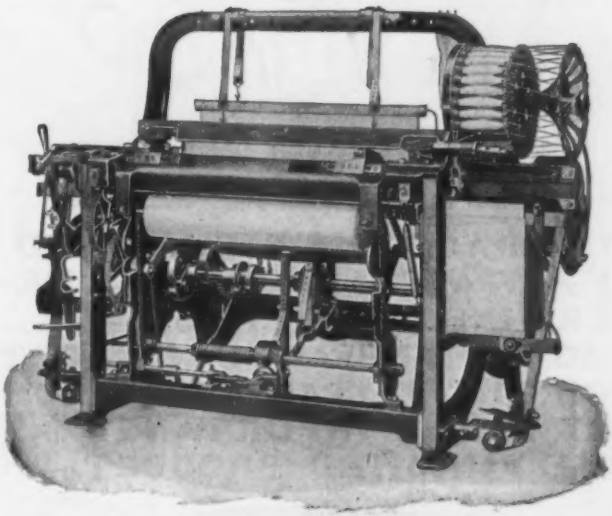
Lowell, Mass.,

COTTON MACHINERY.



Revolving Flat Cards,
Railway Heads,
Drawing Frames,
Roving Frames,
Ring Spinning Frames,
Twisters, Spoolers,
Warpers, Slashers,
Looms.

WORSTED MACHINERY.



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SLUBBING FRAMES
INTERMEDIATE FRAMES
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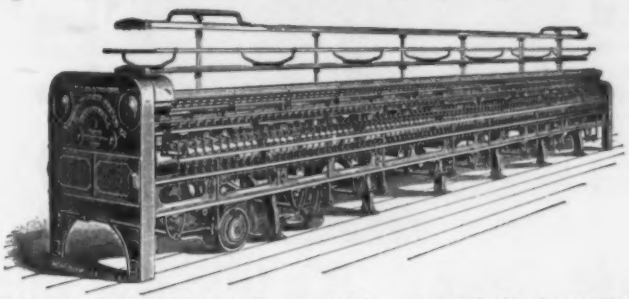

This New Pattern Spinning Frame contains many valuable improvements which will certainly interest you and pay you to investigate. All parts are specially designed and so constructed as to obtain the highest speed and greatest production.

We Invite Investigation and Comparison.

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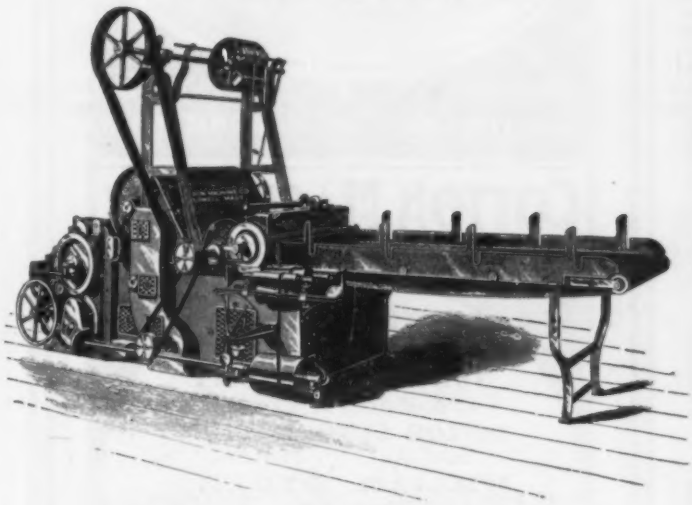

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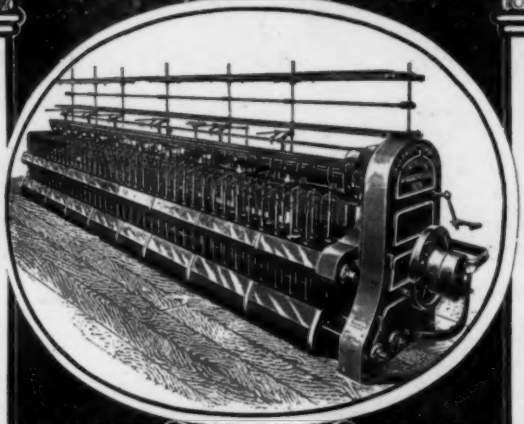

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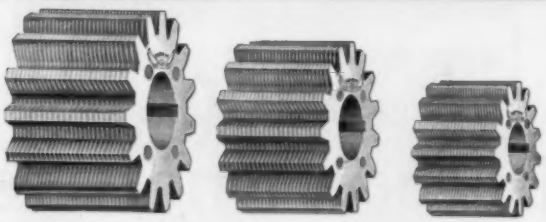

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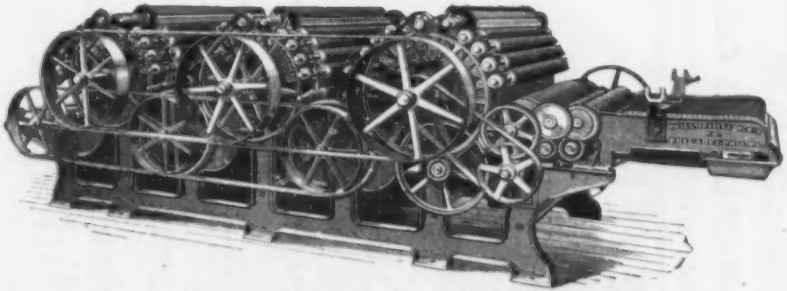

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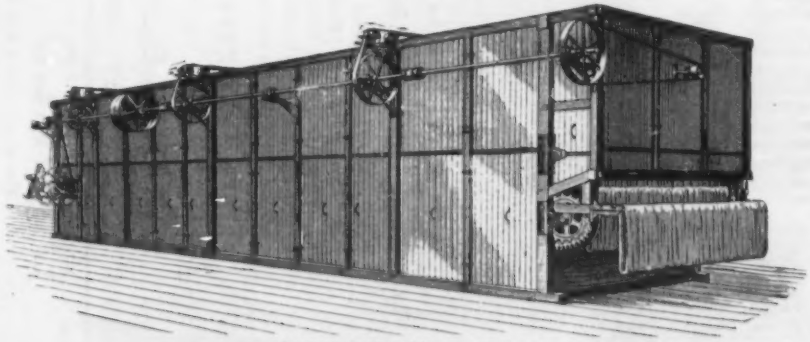

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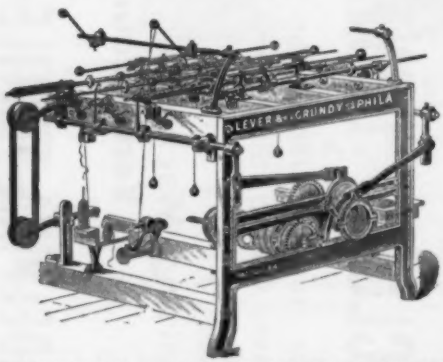

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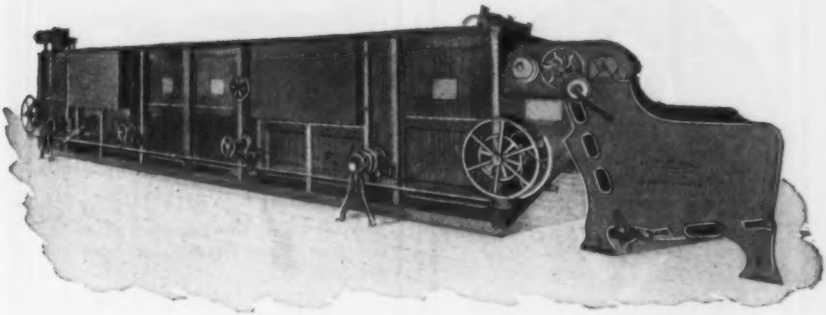

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So you say; but *we* say not, and we will prove it. You admit that you occasionally break a casting, a gear tooth, lever arm, or frame. You admit that when it is broken it is useless, and you have to throw it away. You also admit that sometimes you have to wait weeks to get a new one.

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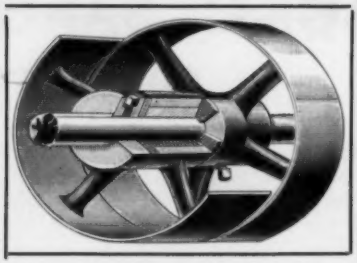

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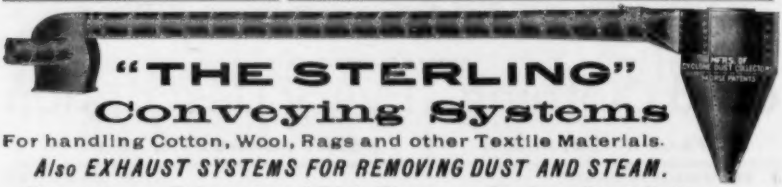

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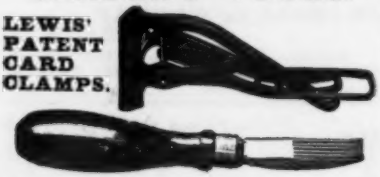

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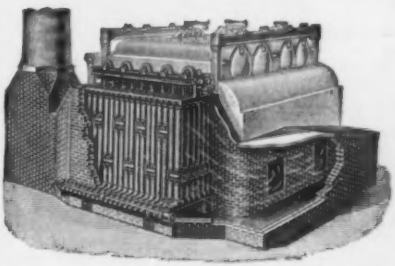

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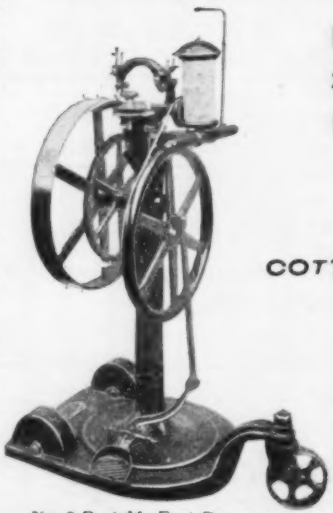

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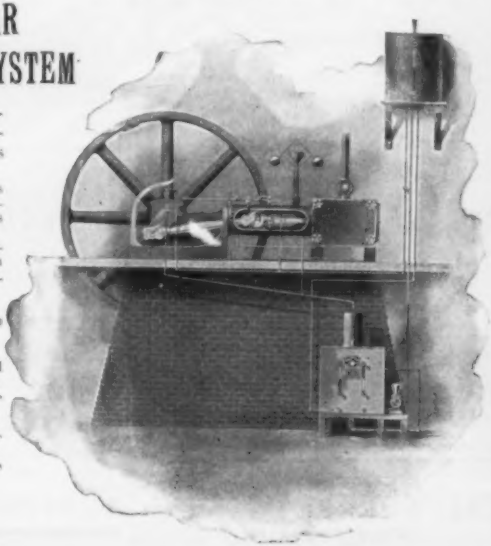

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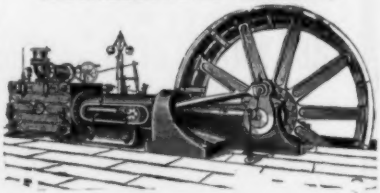

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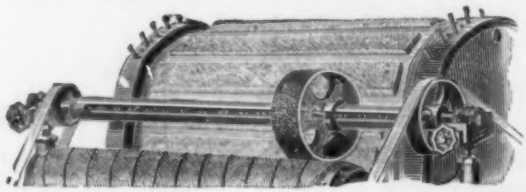

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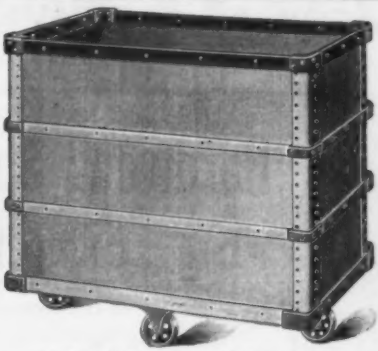
Laminar Taper Box with hardwood shoes. Top View.



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Laminar Taper Box with hardwood shoes. Bottom View.

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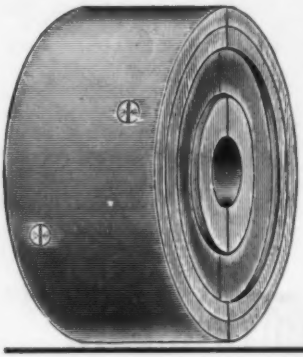

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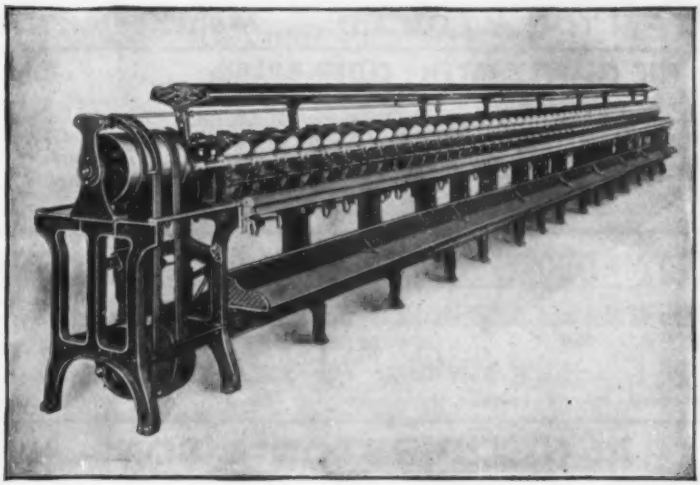

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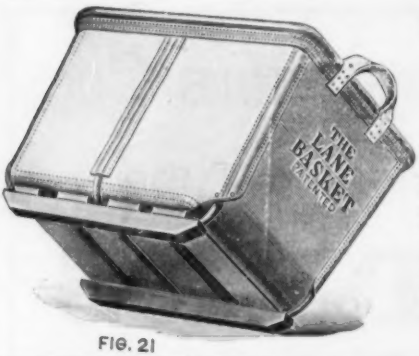

FIG. 21

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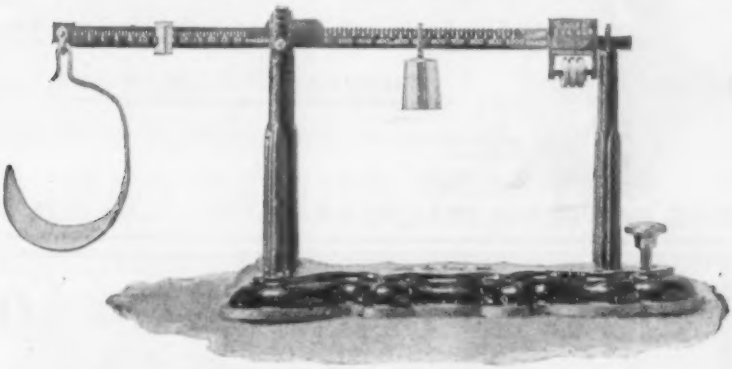

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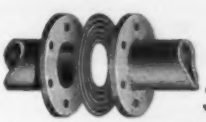

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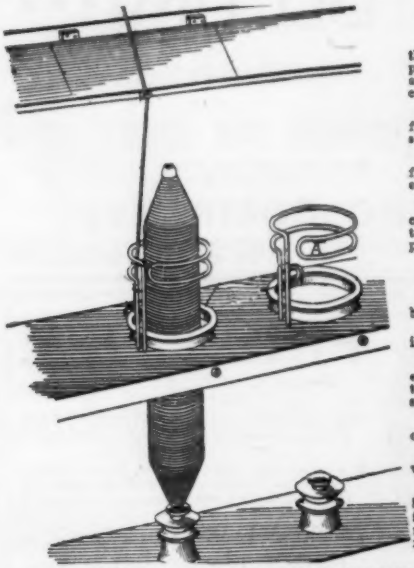

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2. The threshing and consequent imperfection and inferiority of yarn and cloth, occasioned by the use of blade separators is entirely obviated.

3. The traverse of the rail can be increased from one-fourth of an inch to one inch, if frame permits, thereby enabling the use of longer bobbins.

4. The life of the traveller is prolonged fully fifty per cent on account of a more even tension being imparted to the traveller, the same being held in a perpendicular position at all points of the traverse,

5. Frame and rail more perfectly balanced.

6. Heavier travelers can be used.

7. The yarn is wound tighter and more uniformly on bobbins.

8. A material saving in time of doffing, as more yarn is wound on, and longer bobbins can be used.

9. Saving of time of the operator on account of fewer ends breaking, thereby increasing the quality of yarn, and the operator can attend many more spindles in consequence.

10. The life of the ring will be prolonged on account of decreased friction.

11. No accumulation of lint, dust and dirt, which invariably results in the use of blade separators.

The above results have been obtained in the mills of S Sanford & Sons, Carpet Manufacturers, Amsterdam, N.Y. in whose mills the protectors have been in use on all spinning frames since October, 1899, and by permission we refer to said firm for a confirmation of our claims.

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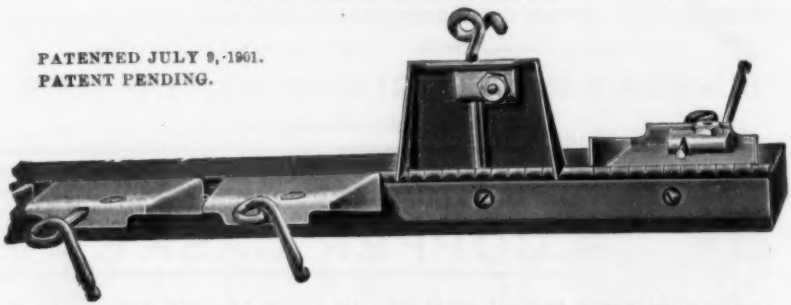

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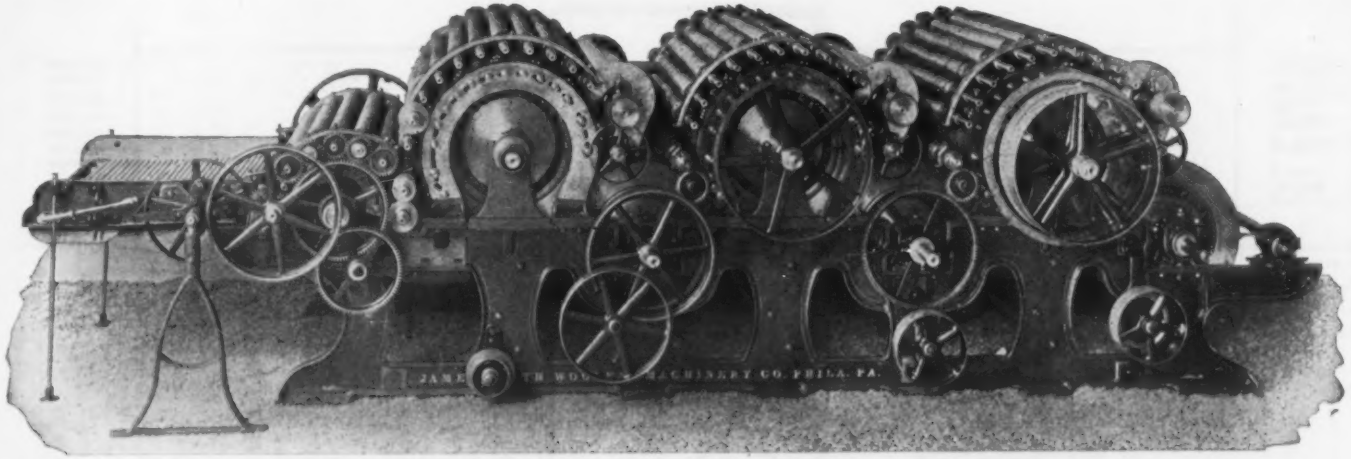

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Textile Patents.

Issued May 27, June 3, 10, 17 and 24, 1902.

Apparatus for Use in the Production of Textile Fibres or Filaments from Solutions of Cellulose, or of Other Material from which Fibres or Filaments can be formed, and for Twisting and Putting into Coil Form such or Other Fibres or Filaments. 702,382. Charles F. Topham, Kew, England, assignor to James Yate Johnson, London County, England.

Apparatus for Dyeing. 700,832. Paul Schirp, Barmen, Germany.

Apparatus for Spinning Artificial Silk Filaments for forming Strands or Threads. 702,163. Robert W. Strehlenert, Stockholm, Sweden.

Attachment for Making Open or Lace Work in Straight Knitting Machines. 703,055. Albert Gee, Philadelphia, Pa., assignor to the Brown Knitting Company, Philadelphia, Pa., a corporation of Pennsylvania.

Bale Tie. 701,259. Hugh De Haven, Brooklyn, N. Y.

Black Sulphur Dye and Process of Making Same. 702,369. Ivan Levinstein and Carl Mensching, Manchester, England, assignors to Levinstein, Limited, Manchester, England.

Blue Wool Dye and Process of Making Same. 703,105. Arthur Weinberg, Frankfort-on-the-Main, Germany, assignor to Leopold Cassella & Co., Frankfort-on-the-Main, Germany.

Circular Knitting Machine. 700,730. Henry Brinton, Philadelphia, Pa.

Cloth Cutter. 702,788. Samuel Geczynski, Berlin, Germany.

Drying Can or Cylinder. 700,776. Alfred A. Hunting, Salem, Mass.

Device for Unrolling Cloth or Other Fabrics. 702,822. Harris L. Rosenthal, New York, N. Y.

Electric Alarm for Cloth Finishing Machines. 701,248. John F. Bannon, Central Falls, R. I.

Electromagnetic Pattern-Controlling Apparatus for Looms. 701,211. Arthur P. S. MacQuisten, Glasgow, Scotland.

Feeding Mechanism for Carding Machines. 701,487. Harry Kemp, Newton, Mass.

Ingrain Carpet Fabric. 702,323. James O. McGorman, Philadelphia, Pa., assignor to George Carson, Philadelphia, Pa.

Jacquard Card and Method of Making Same. 701,775. Jan Szczepanik, Vienna, Austria-Hungary, assignor to Societe des Inventions Jan Szczepanik & Cie., Austria-Hungary, a firm.

Keir for Bleaching, etc. 702,309. Walter W. L. Lishman, Cornholme, England, and Thomas W. Haughton, Culleybackey, and John J. Kirkpatrick, Ballyclare, Ireland, assignors to the Lishman Process Bleaching Company, Limited, Cornholme, England.

Knitting Machine. 703,028. Frank B. Wildman, Norristown, Pa.

Knee Brake for Stopping Spinning Spindles. 701,138. John Boyd, Bothwell, Scotland.

Loom Multiplier Mechanism. 700,999. Horace Wyman and Albert A. Gordon, Jr., Worcester, Mass., assignors to Crompton & Knowles Loom Works, Worcester, Mass., a corporation of Massachusetts.

(*Continued on page 132.*)

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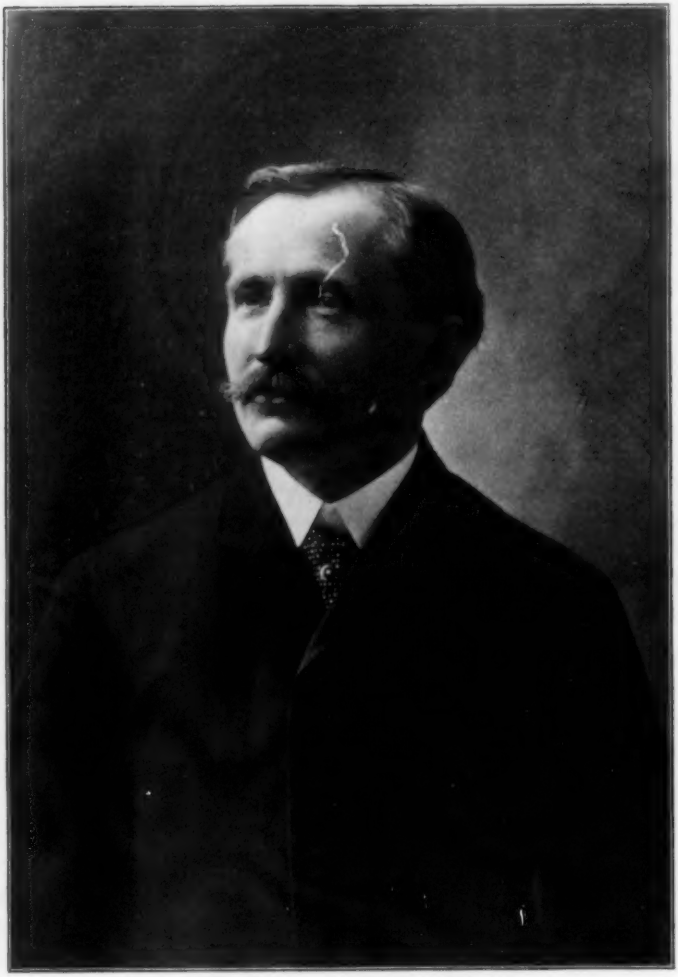

T. F. THIEME.

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T. F. THIEME.

The subject of this sketch was born at Fort Wayne, Ind., February 7, 1857; his father was a member of the leading clothing firm of that city. Mr. Thieme was educated in the local schools and college. In 1876 he graduated from the New York College of Pharmacy. He was in the drug business in New York City for some time, also in Fort Wayne, where he owned one of the leading stores in that line.

In 1889 he sold out his drug business and went abroad to investigate some of the industries benefited by the McKinley tariff law. While abroad, he became interested in the hosiery industry in Chemnitz, Germany, and spent a winter there studying and investigating this branch of business.

In the spring of 1890 he organized a company in Fort Wayne, under the name of the Wayne Knitting Mills, with a capital of $30,000. Returning to Germany, he bought machinery there and brought over twenty-five skilled knitters.

At that period, the conditions of the German hosiery industry were very complex. The McKinley tariff law made a profound impression abroad; manufacturers feared the loss of our market for their hosiery if once the industry got a start in this country. In Chemnitz, every stranger and American buyer was closely watched, and all factory doors were closed tightly against them.

A year before the law went into effect, American buyers streamed over to buy up all the hosiery to be found, or that could be made in time to reach our shores before the new law became operative. Chemnitz never had such a clearing out sale, and our country never had such an enormous stock of hosiery on hand.

After the last car was shipped to reach the last steamer to make port under the old law, Chemnitz was dead, but not for long. The foreign manufacturers for once combined for action, and decided to beat the tariff. They did it grandly. They sacrificed their profits entirely; the working people produced hosiery for less wages than would pay for the food they ate; the dyer reduced his prices; the spinner furnished yarn at cost, and so through the line.

Before the large surplus stock in this country could be fairly tapped, new goods, new patterns were being landed at less money than before in spite of the high tariff, and a panic resulted. For a year or more hosiery brought any price until stocks were reduced.

Meanwhile, the Wayne Knitting Mills Co., having the size of an elephant as viewed by the anxious Chemnitzer, was fighting the battle of its life, and felt small enough for a mouse trap to swallow it up.

The company had made its calculations on the high hosiery value before the McKinley tariff, but by the time they were fairly started, the break occurred. All 35 cent values dropped to a 25 cent basis. Goods costing $2.50 to make went begging at $1.75. Foreign knitters came over with large trunks and baskets expecting to carry them back in a few years to their own country filled with gold. "Small production and high pay" was their motto.

These various causes with others combined to show a loss after a year of two-thirds of the capital of the Wayne company. The question of closing down was often discussed by the board of directors. Mr. Thieme many a night firmly resolved to quit the struggle, but with the morning sun, new hopes and efforts kept things moving again. So long as money could be had, the help was paid every Saturday, but after a time pay days came rather irregularly, until finally, a third Saturday had passed and no pay day. On the fourth Saturday, there was no money at noon, and Mr. Thieme decided to notify the employees that the Wayne Knitting Mills had decided not to bankrupt Chemnitz, but would quit business.

Waiting for quitting time at four o'clock, the first mail brought in a check for some seven hundred dollars from a customer, who providentially had discounted his bill in ten days. So they had a pay day at the mills and from that day the situation began to improve. In 1892 the capital of the company was increased to $100,000; later to $125,000, $250,000, $350,000, and lastly to $425,000.

In 1898, Mr. Thieme's brother, F. J. Thieme, organized the United Knitting Mills with a capital of $75,000 to manufacture children's hosiery, which corporation was recently absorbed by the Wayne Knitting Mills.

The buildings are two and three stories of brick, modern factory construction, with all modern improvements. A railroad side track runs into the yard.

The company has a large dining room serving a hot dinner at noon; a factory committee have charge of this room. Employees pay by ticket, which they purchase in lots of 25 at a time. Coffee with milk and sugar costs 1 cent; dish of beans, peas, potatoes, etc., or plate of thin soup costs 2 and 3 cents. These prices pay for the cost of the food and wages of the cook. All other expenses are borne by the factory. The company find this to be a good investment. Cleanliness, ventilation, system and order are matters that are given close attention. The factory closes at noon Saturdays. The company employs about 800 people.

MONTHLY COMMENT.

Trade between Germany and the United States. A few of the interesting features of last year's trade between these two countries, as compared with 1900:—

German exports to the United States decreased 18 per cent. Exports from this country to Germany increased 8 per cent.

German shipments of drugs and chemicals increased, while her exports of textile goods, especially hosiery, declined.

Instruction in Weaving. In the Woolen Department of this issue appears the first of a series of articles upon shaft weaving. It is the translation of an Austrian work on weaving, Leitfaden fuer den Unterricht in der Bindungslehre, by Ivo. Kastanek, a professor in the textile school at Bruenn. Some portions are necessarily of an elementary character, as the aim of the author is to begin with first principles and give the student a comprehensive treatise of the subject of shaft weaving.

The descriptive matter is unusually clear and concise. The illustrations, consisting of weave drafts, sectional plans and half tone engravings of cloth, make the instruction objective and greatly increases its value as a student's hand book. The series will comprise eight or ten installments, of which we shall endeavor to publish one each month. This will enable such of our readers as may so desire to acquire a comprehensive knowledge of this branch of weaving, within a year. The subject is handled in a systematic and thoroughly practical way,

and the more experienced weavers and designers will find it to contain much of value, presented in a new and attractive form.

Cotton Culture in German Africa. In addition to the experiment in raising cotton in Togo, the German government has been testing the adaptability of Southwest Africa for the culture of cotton. A shipment of cotton raised in Ovampo has recently been tested in German mills, and the manufacturer who made the test says that it is similar in color, fineness and cleanliness to China cotton, the staple being longer, but somewhat irregular in length. Other experts who examined this cotton agreed with the foregoing opinion. This particular lot was raised from native seed. Ovampo is about the same distance south as Cuba is north of the equator. The experience in cotton raising both in Togo and Ovampo indicate that the best results are to be obtained from native seed.

Cotton Manufacturing in Canada. At a recent meeting of the directors of a prominent Canadian cotton mill, it was stated that the cost of manufacturing one pound of cotton into indigo denims in Canada was six cents. The speaker added that he had recently visited our Southern States and seen identical goods made for 3 3/4 cents. The president of the company stated that the preferential tariff in favor of English goods was responsible for the depression in Canadian mills, which is illustrated by the mill in question, in which but 80 per cent. of the spindles had been operated 82 per cent. of the working time during the past year. Owing to Canada's small and almost stationary population the home market calls for but a small amount of goods, which the Canadian mills alone could supply. At present, however, the market is flooded with foreign goods, made under conditions of wages and hours of labor far below the Canadian level. The conditions are even worse in Canadian woolen mills, which are threatened with extinction owing to tariff discriminations.

The Cuban and Philippine Trade in Textiles. Congress having failed to provide for reciprocity with Cuba, our textile manufacturers must abandon for the present the hope of securing by a preferential tariff any advantage over their foreign competitors in selling their goods in Cuba. The reports for January of this year show no increase in our share of the cotton goods imported into that island. The value of such imports for that month was $482,630, of which 51 per cent. came from Great Britain, 31 per cent. from Spain, other foreign countries 12 per cent., leaving but 6 per cent. to come from the United States.

Small as is our part in the cotton goods trade with Cuba, it is of colossal proportions when compared with our share in the same trade with the Philippines, where the imports of cotton last October amounted to $593,857, apportioned as follows: Great Britain, 48 per cent.; Spain, 16 per cent.; Germany, 6 per cent.; other foreign countries, 29 per cent.; United States, 1 per cent.

The entire product of all the cotton mills in the United States was valued in 1890 at $339,198,619, and at the present time we are exporting cotton goods at the ratio of $32,000,000 per year.

The combined Cuban and Philippine imports of cotton goods amount to $13,000,000 per year, nearly one-half as much as our exports of cottons to all parts of the world, and about 4 per cent. of the entire product of our mills.

It is a trade worth having. Why is it not ours, reciprocity or no reciprocity?

—One values an acquaintance in a carriage more than a friend on foot.—Petit-Senn.

Trade with China. A gratifying feature of our foreign trade is the increase in the exports of cotton cloths to China. In 1899 we sent to that country 227,868,196 yards. In 1900, owing to the Boxer troubles, the exports of these goods fell to 101,687,030 yards. Last year, the amount reached 201,368,671 yards.

Other countries have not increased their cotton goods trade with China in the same proportion, which indicates that our cotton goods are winning their way into foreign markets on their own merits. Last year, as compared with 1900 in the Chinese trade, American jeans increased over 7000 pieces, while British jeans lost 2500 pieces. British sheetings lost 6000 pieces and American sheetings gained 11,000. The Chinese imports of British drills remained the same; American drills scored an increase of 34,000 pieces; Indian yarn retains its popularity with the Chinese, while the imports of British and Japanese yarn declined still further. We send no yarn there.

For the ten months ending with April of this year, our Chinese trade in cotton cloths shows even better results. We sent to China in that period 372,439,390 yards, or at the rate of 434,512,650 yards per year; this is more than double the exports for last year.

So much for China. There is room for a similar improvement in our trade with other countries, notably Cuba and the Philippines; only 6 per cent. of the Cuban and 1 per cent. of the Philippine imports of cotton goods come from the United States.

Trade with South Africa. It is expected that a brisk trade with South Africa will follow the conclusion of hostilities. During the war the Germans have not concealed their belief that no matter what the result of the struggle might be, its end would mark the beginning of a German invasion of South African markets. It is reported that German traders had large stocks of goods suitable for the African market ready for shipment when the war closed.

The English have sent a commission of experts to study conditions there, and are naturally unwilling that other countries should capture the trade of this vast territory, the subjection of which has cost them so much blood and money. In the absence of preferential duties, however, the South African market belongs to the trader able to sell at the lowest price. It offers a free field to all comers, and our manufacturers should take steps to gain a foothold at once before the goods of other countries have become more firmly established there.

With the exception of a small quantity of cordage and twine, our exports of textiles to South Africa consist of cotton goods. The quantity is relatively insignificant, being valued at but $112,000 for the year ending June, 1901. During the same period, we sent to other parts of British and Portuguese Africa, cottons to the value of $291,000.

As far as size is concerned, this trade is nothing to brag about, but a very encouraging feature is its recent growth. In spite of the disturbance of trade incident to the war, our exports of cotton to British and Portuguese Africa show an increase in value of over 112 per cent. in 1901, as compared with the preceding year. This is proof that our cotton goods can be sold in this African market, whose importance is measured not by the present size of its trade, but by the trade possibilities of a rich and undeveloped region of vast extent.

The Utilization of Waste and By-Products. In connection with the census reports, a report on this subject has been issued from the Department of Manufactures, prepared by Mr. Henry G. Kittredge of Boston, Mass., well-known to the readers of this journal.

The wealth of this generation has been largely created by the utilization of by-products of materials that were formerly thrown away, and the advances made in this direction during the last decade have been particularly noteworthy.

In his report, Mr. Kittredge takes up the different industries and reviews the processes and improvements which have come into commercial use during the past 10 years, for the purpose of saving what were formerly waste products.

In connection with the woolen industry, a carefully prepared review is presented of the various processes of recovering wool grease and other valuable products, which have been allowed to go to waste with the wash waters. This has been the subject of many inventions. Much more attention has been paid to the subject in England and on the continent than in this country; indeed, with the exception of a few large mills, there has been no general recognition of the importance of these processes and the saving that might be made.

In the Arlington Mills, a plant for treating wool by the solvent process has been in operation since 1895, with a capacity of degreasing 50,000 lbs. of wool every ten hours. It has been found that the saving effected by the solvent processes to establishments that degrease and work their own wool for worsted purposes averages two cents per pound, figured on the greasy wool. This mill is now building a new plant with a capacity of degreasing 200,000 to 250,000 lbs. of wool every 10 hours.

Mr. Kittredge believes that from $2,000,000 to $3,000,000 worth of wool fat and potash are run down the streams and wasted annually in the United States. He suggests that if degreasing plants were established in the principal Western wool shipping points, millions of dollars' worth of wool fat and potash could be recovered annually and from 60 to 80 per cent. of the freight charges might be saved, besides the advantage of putting the wool upon the market absolutely clean, free from further shrinkage and in the most perfect condition for working.

The most serious objection against plants of this character is the large first cost, which is an insuperable obstacle in the case of smaller mills. The solvent process has been more generally used in this country than in others. Abroad there are processes which are successfully employed on a smaller scale and with less expense.

Mr. Kittredge refers to an improvement made in the method of handling shoddy and the improved processes of carbonization.

In cotton manufacturing industries the waste product has been closely utilized for many years, not always by the mill in which the waste is produced, but for other interior purposes. There is a constant tendency, however, to so improve the machinery that the waste made in different processes may be put in proper shape to be put back again in the regular course of manufacture.

Other sections of the report consider briefly the dyeing industry, silk manufacturing as well as other great branches of the trade not allied to textile industries. We presume the report may be had upon application at the census office.

Foreign Trade and the Metric System. The true inwardness of the agitation in Europe for the extension of the metric system is revealed by the discussion in Germany over the proposed law to require all yarn imported into that country to be spun to metric sizes. Keeping statistics is an official hobby in Germany. From the most important affairs of state down to the going and coming of every servant girl, records are kept of the business of the country. Among other things they show that, since 1897, the German cotton industry has remained

at a standstill. A record has been kept of the sizes and quantity of cotton yarn used in Germany, and shows that all finer than metric 80s (English 47s) is imported, none being spun in German mills, while 60 per cent. of the yarn between metric 45s (Eng. 26s) and metric 60s (Eng. 35s) also comes from abroad. Great Britain is the chief source of supply for this yarn, which is numbered by the English system.

One result of this dependence on English spinners has been to make the Germans as familiar with the English as with the metric system of yarn numbering. The professed object of the measure already referred to, requiring yarn imported into Germany to be spun to metric sizes, was the extension of the metric system, which is by no means exclusively used, even in that country. The advocates are loud in their praises on the decimal system, and in their condemnation of the English method of numbering. The proposition has gained a large following, as it aims to extend the Continental system of weights and measures, and, what is still better according to German ideas, to strike a blow at something English.

The movement would have been set down as another shining example of European devotion to high ideals, as exemplified in the metric system, and its true inwardness would have remained a mystery, had it not been for the outcry raised by the German weavers, who buy in Great Britain the bulk of the yarn they use, and who declare that the proposed meddling with the English system of yarn numbering would result in serious loss to themselves. The weavers argue that English spinners will not spin to metric sizes except by special order and at an advanced price. This means that the German weaver must order yarn earlier, carry a larger stock and pay more for it. Result, higher cost of German cotton cloths, of which the exports are valued at about $62,000,000 per year. The increased cost, they say, will greatly restrict, if not destroy, this foreign trade.

Naturally, the German spinners are not alarmed at this view of the case, but advocate the proposed measure as a means of extending the use of the decimal system.

The Germans are strongly in favor of the metric system as long as it pays. When it threatens to cost them anything, their enthusiasm for weights and measures based approximately upon the 10,000,000th part of the variable distance between the equator and the north pole, vanishes at once.

The controversy is chiefly interesting to Americans as showing how our own foreign trade in textiles may be affected by the extension of the metric system, for which a bill has been favorably reported to the House of Representatives. We seek to gain a foothold for our cotton goods in foreign markets. The bulk of the goods now supplied to these markets come from England, and are measured by the yard and weighed by the pound. It requires no great amount of foresight to see that any attempt on our part to compel foreign purchasers to take our cotton goods measured by the metre and weighed by the kilogramme would result in failure and prevent us from acquiring the foreign trade we must have, if our cotton industry is to develop along this line. In the race for foreign business our cotton manufacturers could have no better system of weights and measures than the very one they now use.

What would be thought of a general without ammunition who would deliberately change the calibre of his rifles and prevent the use of captured supplies?

Yet that is precisely what the adoption of the metric system means to our foreign trade in cotton goods.

Southern Child Labor. The rapid increase in the number of cotton mills in the South, and the large profits made in most of them previous to last year, has not been due to their proximity to the cotton fields. The freight on cotton from New Orleans to Liverpool is less than from New Orleans to many of the manufacturing centres of the South, notably those in the Carolinas.

Fuel is cheaper, but the cost of fuel in the manufacture of cotton goods is too small for any difference in this item to explain the advantage which Southern cotton mills possess over the mills in the North.

The other supplies used in making cotton goods cost as much in the South as elsewhere.

There remains the large item of labor. We find a large population, poor in purse and eager to work long hours for low wages, flocking to the gates of Southern mills. In the absence of any laws regulating the employment of labor, the Southern manufacturers are able to employ children regardless of their age, whenever the parents are willing they should be employed.

In labor we find the only important difference in the cost of production between the North and the South. Human nature everywhere is such that the strong arm of the law is necessary to protect children of tender age from employment in mills, and give them an opportunity to become both mentally and physically stronger than their parents.

The older the manufacturing community, the more stringent are the labor laws, as is shown by the conditions in Continental Europe, England and our own Northern states.

The South is the only important manufacturing district anywhere that is without laws restricting child labor. There is, however, a growing sentiment there in favor of such restrictive legislation. Recently, the attention of the public has been called to the question by a magazine article, in which the conditions of Southern child labor were pictured as almost inconceivable horrors. It is beyond question that this Philistine picture is exaggerated.

Two letters received from Southern mill men appear in this issue and present the Southern view of the question. Sooner or later labor conditions in the cotton industry of this country are sure to become equalized.

A METRIC MIXUP.

Statements are frequently made as to the large part of the world's population now using the metric system, and the necessity for the rest of us to do likewise in order to keep up with the procession.

In fact the advocates of the metric system frequently abandon all other claims for this method of measuring and assert that it should be adopted simply because so many people are now using it. The entire population of Continental Europe is usually counted as exclusively employing this decimal system.

As far as the textile industry is concerned, this claim is unfounded.

A German work entitled Kalkulator fuer Artikel der Textilbranche, of which the third edition has recently appeared, shows what a babel of tongues now prevails in the weights and measures of the textile industry in Europe. The author seeks to explain how to calculate for textil fabrics and at the same time bring the principal standards of yarn and cloth now used in Europe into conformity with the metric system.

We will take a few examples at random from this book and let our readers judge whether the metric system is used exclusively in the European textile industry or not.

On page 3 occurs the following:

"Cotton yarn is reckoned by the English system of reeling, which is in general use by spinners in most all countries, and the price is given as so much per English pound. A

reel is 1½ yards in circumference, equal to 54 inches. Eighty turns make one binding; seven bindings make one skein, equal to 840 yards (768 meters). The count of single yarn is the number of skeins in one English pound.

Next comes the following list of different ells or yards now in actual use in Europe.

Prussian	ell,	25½ inches,	=	67 cm
Wuerttemberg	"	24½ "	=	62 "
Vienna	"	29½ "	=	78 "
Baden	"	20 "	=	60 "
Swedish	"	24 "	=	60 "
Russian	"	28 "	=	72 "
English Yard		36 "	=	91 4 10
Danish	"	24 "	=	63 "
Bavarian	"	34½ "	=	84 "
Saxon	"	24 "	=	56 1-2

Each of the above ells has a corresponding inch which is different from the others. Only two of the ells, (Baden and Sweden) are of the same length and here the uniformity is short lived, for one has 20, the other 24 inches.

Undeterred by this medley, the author seeks to bring order from chaos by treating each ell separately. Of the Prussian ell, he says:

A Prussian ell is Prussian 25½ inches or 67 cm. long. A meter is 55 8-10 Prussian inches long. A piece of cloth one Prussian ell wide and 75 Prussian ells (50 meters) long, with one thread of No. 1 English yarn to each centimeter, contains 3,350 meters of yarn, which, reckoning 60 grams to each 100 meters of No. 1 English yarn, weighs 2,010 grams. From this we make up the following table:—

Ends per cm	Ends in warp.	Length meters.	Weight grams.
4 No. 1 (English)	268	13,400	8,040
10 " "	670	33,500	20,100
16 " "	1,072	53,600	32,160
etc.			

The same confusion appears when we come to the estimates of cost of different fabrics. There are English yarn counts, width in centimeters, picks per centimeter and prices per English pound scattered through the calculation, which ends with a reduction of meters of warp and filling to yards, which are then reduced to English skeins of 840 yards each in order to determine how much yarn must be purchased to fill the order.

We ask every reader to study the above medley of Prussian ells, English yards, Prussian inches, English pounds, metric centimeters, English yarn counts and threads per centimeter, and bear in mind the following facts:

1. It is a simplified method designed to aid European textile manufacturers to make calculations.

2. The formula given applies only to Prussia; each one of the other sections we have named use a different ell and must, therefore, have a new formula to reduce its textile standards to the metric system, but which leaves the calculator completely in the dark as to the equivalents by the other system referred to.

3. These examples are taken from today's conditions, over one hundred years after the introduction of the metric system into Europe.

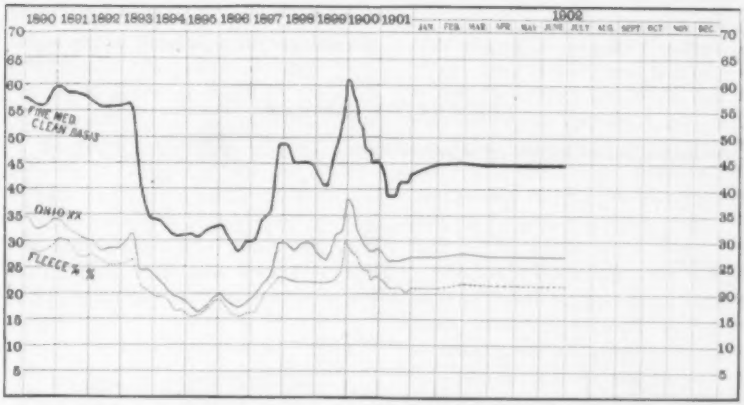
If the above confusion exists one hundred years after the introduction of the metric system into a country in which at the beginning the textile industry was in a primitive condition with all labor done by hand, what will be the effect of introducing it into the highly developed and complex textile industry of the United States? It is a very grave matter to meddle with the established weights and measures of a whole people.

Meeting of the New England Cotton Manufacturers' Association.

The 73d meeting of the New England Cotton Manufacturers' Association will be held in the hall of the American Society of Mechanical Engineers, 12 West 31st St., New York City, in accordance with the invitation of the council of that society. While all the arrangements are not completed, it is expected that the opening session will be held on the evening of Tuesday, Sept. 30th, and that the subsequent sessions will be on Wednesday forenoon and evening and on Thursday forenoon and afternoon.

Although the papers will embrace a wide range of topics, yet it is expected that especial attention will be given to the baling, shipment and grading of cotton.

WOOL MARKET.



There has been a slight improvement in the tone of the market since our last report. Higher prices are asked for the new clip, but transactions in the Eastern markets have been confined chiefly to old wool at unchanged prices. The near approach of the light weight season causes manufacturers to await developments in that direction. It will require an active and strong goods market to maintain the price of wool at the level reached in the West this spring. Manufacturers claim that an advance in the price of goods is necessary to compensate for the increased cost of the raw material. This brings the question up to the clothier and consumer. The latter pays what he can afford. If more is asked, he does not buy. Nothing is surer than the increased use of cotton and wool waste products to supply the demand for cheap clothing, in case wool rises much above its present level.

A feature of the situation is the increased quantity of wool coming from abroad. During the past eleven months 155,271,122 lbs. of wool, valued at $16,549,604, was brought into this country. This is at the rate of 168,000,000 lbs. per year, as compared with 104,000,000 lbs. in 1901, 156,000,000 lbs. in 1900, 77,000,000 lbs. in 1899 and 132,000,000 lbs. in 1898.

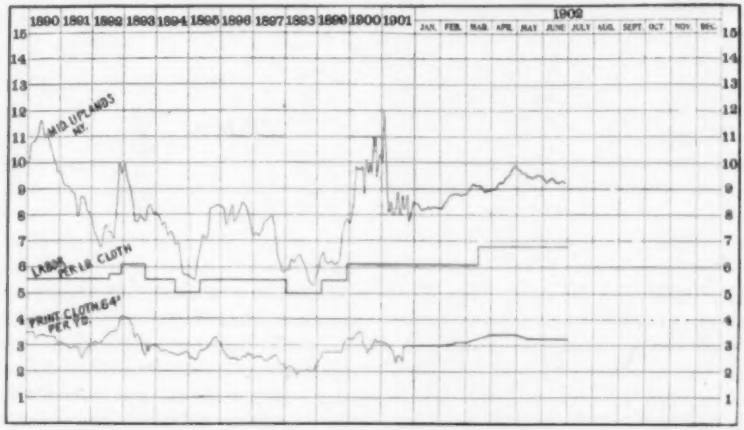
This shows to what an extent our wool growers fall short of supplying the home demand for wool. As the wool to supply the deficiency in the domestic supply must be brought in under a high tariff there is little likelihood of prices in the home market falling off materially. Carpet wools have been active and strong. The recent importations have been large, and yet there are very small stocks in dealers' hands. The use of these wools is more extensive than their general name implies, and desirable lots are quickly taken up by manufacturers.

The German Worsted Industry is in a deplorable condition. Most of our readers can appreciate the situation since it is but a few years ago that our own mills were in the same state. The German tariff is now being revised as was ours during that dark period in the history of our mills.

The financial reports for the past year of a number of German worsted mills have just been published. Ten of them show an impairment of capital aggregating $2,542,250, or 36 per cent. of the original stock. For the past ten years the dividends paid by these ten concerns average but 1 1/2 per cent. per year. By adding the amount that this falls short of a fair return on the investment, to the large losses

of the past year, we get an idea of the disaster that has overtaken this German worsted industry during the past decade. Many concerns have recently failed or retired from business, while it is said that the private concerns which do not publish annual statements have suffered heavy losses.

THE COTTON MARKET.


1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901
1902
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
MID UPLANDS N.Y.
LARDS PER LB CLOTH
PRINT CLOTH 64" PER YD.

Judging by the price, cotton is still king. The daily fluctuations due to varying weather reports from the South have been within narrow limits. As is always the case when rain or shine in the South has such an influence on the cotton exchange, the weather reports have been of the kaleidoscope variety.

The fact seems to be that as a general thing weather conditions are favorable for the coming crop.

The statistical position is very strong. On June 27th, this year, the world's visible supply was estimated by the Chronicle at 2,559,053 bales, which is over 300,000 less than at same date last year when the same authority placed it at 2,886,908 bales, as compared with 1,869,053 bales in 1900 and 3,797,592 bales in 1899.

The actual condition of the world's stocks has kept prices up. The foreign spinners are not at all satisfied with the present showing. The actual decrease of 300,000 bales has far more influence on the European spinner than have the many prophecies of a large crop to come.

The takings by Southern mills are now so large as to distroy in great measure the value of comparisons of crop movements between this and former years. The invisible stock which statisticians were counting upon does not materialize, and much of it has undoubtedly been converted into yarn by Southern spindles.

The demand for Egyptian cotton continues good. Under date of June 23d, the Alexandria letter to Fr. Jac. Andres says:

"Our market has been strong with a rising tendency throughout the week in consequence of buying orders from England and the Continent, the quickly decreasing stock, and the increasing tenacity of the few remaining holders. From our last week's closing of $13 5/32 for July contracts we reached the highest point in our market this season, $13 7/16, but eased off a bit and closed today July $13 3/8, August $13 11/32, November $11 1/8, January $11 1/32. Arrivals continue to decrease this week, showing the small figure of 1,017 Cantars, against 35,150 Cantars last year. Stock stands at 757,706 Cantars, against 1,125,280 Cantars last year. The position is an

extremely strong one, and we shall undoubtedly see even higher prices. The cotton still existing is composed all of high grades. Our prices for current and low grades are only nominal as they are, so to speak, no more on our market. In consequence of the small stocks and the shortness in general of Egyptian, we are of the opinion that, even with the most favorable prospects of the coming crop, our new season will commence with high prices and we would advise spinners to secure their early wants now."

The Knit Goods Situation.

The underwear market has livened up considerably during the past few days due to the opening up, or at least the partial opening of a number of lines of summer weight underwear for spring of 1903.

The majority of commission houses and mill agents are showing certain lines of spring goods and a fair amount of business has been secured, but, nevertheless, it cannot be said that the market has fully opened up. On special numbers in men's plain balbriggans and fancy stripes, fair sized orders have been booked, but these orders are principally from the men's furnishing trade, and the large western jobbers have not yet displayed any evidence that they are prepared to inspect the new lines.

On the matter of prices, agents are inclined to be reticent and, unless definite quotations are requested, they prefer to hold back until the situation has taken a more definite shape. From present indications, it would seem that, notwithstanding the increased cost of yarns, prices in the majority of cases will be practically the same as those of last season, although one or two cases have been reported where certain manufacturers, having already booked fair sized orders at last season's prices, have advanced the low end of the line about 12½c. per dozen. This refers particularly to men's balbriggans at from $2.75 to $2.87½ per dozen.

The lowest quotation yet brought to our attention on men's balbriggan shirts and double seated drawers is $1.62½ for shirts and $1.75 for drawers; but, as is usually the case with the lines of summer goods, the keenest competition will undoubtedly be on the low end of the balbriggan line and, it is possible, that lower prices may yet be made.

Little attention has, as yet, been paid to lines of ladies' ribbed underwear, although one mill agent representing a well-known manufacturer informs us that if the present business continues, his line will be sold up and withdrawn from sale within a week or 10 days. While some novelties have been shown in the way of men's fancies, very little that is new has, as yet, been produced, and from present indications, it would seem that there will be very little improvement in this respect over last season's lines.

Taking everything into consideration, the existing conditions up to the present writing are not deemed entirely satisfactory, and the prevailing opinion seems to be that the opening prices are unwarrantably low.

The duplicate business on men's fleeces and heavy weight underwear has dropped off considerably during the past few days, but the market still remains firm. In almost every case the mills have sufficient business to keep them running far on into the season, and it is a well known fact that the late-comers on men's fleeces were obliged to pay considerable advances over the prices which prevailed earlier in the season. Not only on fleeces, but on heavy weight goods in general was this the case, and the situation came as a rather unpleasant surprise to many jobbers who had oversold their original purchases with the expectation that they could duplicate their orders at any time, but who found, on coming into the market again to cover their requirements,

that substantial advances had been made in almost every direction. Children's fleeces are particularly scarce and the demand for goods of this class under $2 per dozen seems to be quite strong.

For spot delivery, men's balbriggans are much sought after, as are also ladies' ribbed goods ranging from the lowest end of the line up to $4.25 per dozen, and there seems to be very little surplus stock in the market.

In the hosiery market, the spring season is fairly under way and is considerably farther advanced along certain lines than are the spring lines of underwear. The demand for ladies' lace lisle and open work hose of every description is reaching large proportions and, as was predicted some time ago, this will, undoubtedly, be the strong feature of the coming season.

A large amount of business has already been booked on ladies' domestic seamless lace hosiery ranging from the lower grades at 75c. per dozen up to the better qualities of lisles at $1.87½ and $2.00, while the manufacturers of fashioned feet lace goods are, in many instances, entirely sold up to May and June of next year.

Considerable attention is also being devoted by domestic manufacturers to full fashioned lace hose made on flat frames and the results thus far indicate that better values can be produced than can be imported. We refer particularly to goods which can be sold to the jobber at $3.25 to $3.50 regular, and such as are sold in the Chemnitz market at $8.70, which land at about $3.28 to $3.31 per dozen.

At least two domestic manufacturers are also making preparations for the production of still higher grade lace lisle and silk lace hose to retail at from 75c. to $1.50 per pair, and some interesting developments along this line may be looked for in the very near future. The machines have been installed and active operations will soon be commenced.

Reports from Chemnitz indicate that the hosiery market is experiencing such a boon as has rarely, if ever, been known before. Prices have advanced considerably on many lines and deliveries are away behind. Shipments which were due last October, November and December are still on the books, and no definite statements will be made as to when these goods will be delivered. Lace hosiery of every description is eagerly picked up and very large advance orders have been booked for next season.

Embroidered goods also continue strong, more particularly in the lace and embroidery combinations. Split feet hose are scarce, and prices have been advanced all along the line in this class of goods and qualities are, in many cases, being reduced to meet the emergency.

Manufacturers of golf gloves have all the business and more, too, than they can attend to, and it is said that not more than one-half of the orders which have been booked will ever be delivered. Deliveries for the American market are about due now, but it is quite certain that shipments will be very much behind.

Child Labor in the South.

Editor Textile World:

I have read an article on child labor in the South, which appeared in a little magazine called the Philistine, and I want to say a few words on the same question to the readers of the Textile World. I have had an excellent opportunity to become acquainted with the actual conditions in Southern mills, as I have been a cotton mill overseer in the South for years.

The fact is that the condition of child labor in Southern cotton mills is about as bad as it can be. There are no legal restrictions and, therefore, no penalties for employing children of any age.

Every overseer and superintendent is a law unto himself in the matter, and employs any child when he thinks

he can profitably do so. It is true, manufacturers have made promises to the legislatures of different states in regard to regulations for child labor. It goes without saying that these promises are made in every instance to forestall legislation on the subject, and, while they do post printed notices in the mills, you will readily understand that they are practically a dead letter.

Now regarding the condition of children employed in the mills. I think Mr. Hubbard makes their condition far more pitiful than the facts of the case warrant. As a rule they are not overworked, and I believe, especially in the South, nine-tenths of these children are better off working in the mill than they would be working in the cotton fields or playing out doors in the hot sun. Especially do I believe this to be true, when one takes into consideration the added comforts of life which the child takes into the home, as the result of its work.

You will understand that there are not enough free public schools throughout the South that can accommodate all children. My remarks above are made on the supposition that the child is so situated, that it cannot be sent to school. The city of Columbus has a public school system that will compare favorably with any Northern city, but this cannot be said of the towns across the river in Alabama, where most of the operators of the Columbus mills make their homes.

Southern mills are doing a great deal for the children in their employ, in the way of furnishing free schools for them, and they, certainly, deserve much credit for doing so. The Southern mill operator is poor, and as a rule ignorant, so far as book education goes; for instance, one of the brightest men in my employ asked me the other day if Massachusetts was a part of the United States.

Southern manufacturers are determined to retain the advantage they have over New England in the matter of wages and long hours.

EX-CAROLINA OVERSEER.

A Reply to the Philistine.

Editor Textile World:

I trust that this letter will be published in the Textile World, as I desire to expose the gross unfairness exhibited by the writer of a recent Philistine article upon child labor in the South.

I met Mr. Hubbard during his visit to the South some time ago, and was then impressed with his evident desire to create a sensation, and I find in his article evidences of the same desire, which, unfortunately, is not controlled by a strict regard for facts. His statements do great injustice to Southern cotton manufacturers.

Many of his statements, I believe to be entirely false and misleading, while others are so grossly exaggerated that they are simply ridiculous to any one knowing the facts in the case.

Now the simple truth is, the condition of labor in Southern cotton mills is much the same as it was in New England in the early days of the industry. That the mills run as a rule eleven hours is true. They did the same in New England until a few years ago.

Child labor is allowed in Southern mills. There are practically no laws regulating the same, and I do not believe child labor is of any advantage to any mill. Neither do I believe that the possibility of using child labor unrestrained by law ever caused a New England firm to remove its plant to the South. Cheaper labor (no child labor), longer hours, and nearness to the cotton field, and perhaps in many instances cheaper power are the causes of the rapid growth of the cotton industry of the South.

I have been connected with the cotton industry North and South for thirty-five years, and I do not hesitate to say that I believe the operatives in Southern mills are treated with greater kindness and consideration today than they are in New England. This is simply a matter of business; the employer has found he can get far better results by kind and considerate

treatment of Southern help than by any other method. If one were to believe Mr. Hubbard's statements, he would believe that children of five and six years of age and upwards were usually employed in Southern mills. Now I have looked over one of the largest cotton mills in the South today to see to what extent this statement is true. In many departments, I do not find a child whom I believe to be under fourteen years of age. In some rooms, I find small children, but not a child whom I believe to be under ten years of age.

In one instance, I asked a bright looking little boy how old he was; his reply was: "I am in my fourteenth year, sir." In another instance, I asked a little girl piecing up ends on a spinning frame her age. She replied: "I am in my thirteenth year."

Now Mr. Hubbard's statement that these children never talk to one another and never play is simply amusing to anyone knowing the facts. Any overseer employing them sees them talk, play and sometimes fight as valiantly as their grandfathers did at Gettysburg. I, myself, have seen these same little boys, apparently not more than ten or twelve years of age, fighting like gamecocks in the streets on their way home after their day's work, and fighting with knives too, just the same as their fathers would do on very slight provocation.

Mr. Hubbard says: "All orders are carried out in pantomime, emphasized by pokes, punches, pinches, shakes and kicks." Now let me say right here, that the life of any overseer or superintendent, who should undertake to manage these children by shakes and kicks, would be a very fair risk for a life insurance company and would quickly find the climate of the South too hot for his health. Let no one for a moment believe I favor child labor in cotton mills. I do not believe in it. Give the South better schools, and more of them. If need be, let there be fewer churches and more schools. The hope of the South today is in the better education of the masses.

There it at present too little ambition among the poorer classes of the whites in the South to educate their children, but all of this will be changed in time and the South will become the garden of America.

I notice what Mr. Hubbard has to say in regard to corporation stores in connection with Southern cotton mills. His statements may be true in some sections of the South, but in many of the largest manufacturing cities of the South the help is paid once a week or once in two weeks, precisely the same as they are paid in Lowell, Lawrence, Fall River or New Bedford, and every man, woman and child draws in cash the full amount due.

In many of the larger cities there are no stores connected with the mills, and all the help are perfectly free to trade where they please. Conditions of labor in the South are not so good for employees as in New England, but I believe they will gradually improve.

AWAY DOWN SOUTH.

—Nature gives genius; society, wit; study, taste.—De Bonald.

—Composing a prospectus; spiders spinning their webs.—Pichot.

—When duty is in question, every man who investigates is undone.—A. Theuriet.

—The death of a mother is the first of one's sorrows that she does not share.—Pichot.

—The prolix discourse, like the candle wick, loses in clearness as it lengthens.—Pichot.

—Promises hold friends better than benefits; for them hope is a chain, and gratitude a thread.—Petit-Senn.

—The polar star, like experience, guides men only when night has fallen, and rises only when they are about to depart.—Petit-Senn.

The Year's Progress in American Knitting Machinery Lines.

The past year has been one of progress and development among builders of knitting machinery. They have, as a rule, been well employed on orders for their machinery. Almost all the shops have run full time and turned out as much machinery as their capacity would permit.

The change of fashion has found American builders of knitting machinery ready to meet the demands made, and especially for fancy hosiery, machine builders have perfected new machines or attachments for this purpose which enabled hosiery manufacturers to put upon the market a very wide range of goods of this character. A number of new machines have been brought out, and older models brought up to date. We review the year's developments briefly.

THE PEPPER MACHINE WORKS, LAKEPORT, N. H.

They have brought out a circular machine for the production of tufted work in one or two colors automatically, with longer or shorter loops as may be required for mitten linings or for "Tams," where the looping threads are combed or napped to produce a long fleece-like surface. The mechanism for producing this fabric enables it to lock or bind the looping threads so they cannot be drawn out. They have also brought out an improved "toque" machine of the circular pattern, full automatic, stitch changing and striping attachments (two colors) built with one or two feeds, according to pattern required. Their latest invention is a machine for knitting sweater bodies, circular, producing the one and one and diagonal pattern with automatic striping, making a fabric which, so far as we know, has heretofore only been made on a hand machine, which requires an operator for each machine. This new machine requires no more attention than an ordinary ribber and one operator will attend to a dozen or more machines, while the production exceeds that of the hand machine.

MAYO KNITTING MACHINE & NEEDLE CO., FRANKLIN FALLS, N. H.

This concern builds the Acme machine, and during the past year has made important improvements and kept up to date by some changes and additions. They have brought out a lace attachment for making a lace stitch effect down the front of a stocking and over the instep. A variety of patterns is possible with this attachment by a few simple changes, and the machine can be easily and quickly changed from lace to plain work. The tipping attachment for tipping heels and toes, especially on infants' goods, is another new thing. This attachment can be used in connection with the lace attachment if desired. A plating attachment, which is an addition to their yarn changing attachment is another new thing. This makes it possible to change the yarn automatically in the heels and toes and at the same time to plate a cotton hose with a worsted thread. They have also an improved method of transferring ribbed tops and legs, whereby it is possible to do this without dropping stitches and in less time than heretofore. The transfer cup is simplified, and injured points can be quickly removed and replaced. A simple and compact web take-up, especially useful on lace machines, has also been added. The Acme machine is equipped with a double sole attachment and yarn changer.

THE AMERICAN KNITTING MACHINE CO., PHILADELPHIA.

This concern has brought out a materially improved model of the Victor machine, which embodies the improvements which have been suggested through the practical operation of their machines in past years and to conform with constantly changing conditions of the trade and increasing demands of the hosiery manufacturer. The past year has been a very suc-

cessful one with them, and we understand that their order book is filled for weeks ahead. They have brought out during the past year a new striper and a lace machine which knits a lace front. This is a distinct machine in itself. The striper is also a separate new machine, enabling a wide range of work in this line to be accomplished. Both of these machines have been illustrated and described in previous issues of this magazine.

PAXTON & O'NEILL, PHILADELPHIA,

continue to build the 3/4 automatic machine which has been such a success, and have improved it in minor details. They have exclusive right to build Brown's patented device for lace effect. This firm has made a specialty of fine gauge machines, and are successfully building 240 needle machines, which are working smoothly and with great satisfaction, a large part of their business being in duplicate and repeat orders from old customers.

THE EXCELSIOR KNITTING MACHINE CO. OF ALLENTOWN, PA.,

have brought out a two-feed 7/8 automatic knitter, designed especially for ladies' hose or string work. The special feature of this machine is the large production that is turned off in comparison with the single feed machines, and the saving of floor space and cost of labor, repairs, etc., in proportion to production.

A number of important improvements in the line of new machinery, which are the inventions of Mr. Hirner, president of this company, have been perfected during the past year, but have not yet been offered in the general market. In previous issues of this magazine we have described some of these inventions. The firm has been very busy filling orders for their regular line of 3/4 and 7/8 automatics, and at the present time have orders away ahead.

H. BRINTON & CO., PHILADELPHIA.

This concern has not brought out any especially new type of machines during the past year. They have been very busy attending to orders in their regular line and have turned out their full capacity of full automatic seamless and rib knitting machines.

E. JENCKES MFG. CO , PAWTUCKET, R. I.

This concern has had a very successful year with the Invincible Full Automatic Machine. Their shop capacity has been lately increased to meet their orders, which have come in a large part from the South and West as well as from New England, and their foreign business has lately been quite an important factor, and is growing all the time. They have brought out machines adapted to making lace effects, now very much in demand, and have perfected a plating arrangement by which a worsted face can be put on cotton hosiery, and they have a machine adapted for making high spliced heels and double soles. There have been some minor changes made, all with the view of simplifying and improving the mechanism wherever it seemed possible to do so and perfecting their shop system. They report their sales much ahead of any preceding year.

THE BRANSON MACHINE CO., PHILADELPHIA.

During the past year they have made such improvements as enables them to advertise a 15/16 automatic machine, which they claim is of equal efficiency to full automatic machines. It is simple and very free from mechanical complication. They have also added to their machines, devices for making lace work for plateing and for tufting. The lace attachment is added to either the 3/4 or 15/16 automatic. The plateing attachment is added to any of the various machines they build, enabling the user to make goods of one kind on one side and another on the back, or it may be used with one material of one color on one side and another or the same material of a different color on the other side. They have also brought out an automatic striping device which will make

stripes of any size from one round up and which is applied to both their hosiery and underwear machines.

THE TEXTILE MACHINE WORKS, READING, PA.

Within the past year, this concern has brought out a line of full fashioned hosiery machinery, a class of machines which has not previously been made in this country. This necessitated the erection of a new machine shop, which is equipped with special machines for building full fashioned machinery. The best types have been selected for American demands. The machinery is substantially built and all parts are interchangeable.

TOMPKINS BROS., TROY, N. Y.

This concern has perfected several new things in the way of attachments for open work, special attachments for their fine gauge work and improvements in the construction of their machine. It has been a very busy year with them.

SCOTT & WILLIAMS, PHILADELPHIA.

During the past year, the firm of Scott and Williams, of Philadelphia, have made a number of valuable contributions to devices and machinery used in knitting mills, and have introduced two entirely new fabrics for underwear and with machinery for making the same.

It was for many years recognized as desirable to secure a fleece lining on ribbed goods, but great difficulty attended the manufacture of goods of this class, but D. C. Bellis, of Philadelphia, succeeded in devising a machine which overcame the mechanical difficulties, and although he was a pioneer in this branch of the art, machinery made in accordance with his invention is still in successful use.

Subsequently, patents were taken out by various inventors, simplifying the machinery and improving the fabric, so that today Scott and Williams, owning the Bellis and succeeding patents, are offering to the trade a most acceptable machine for knitting ribbed fleeced underwear as well as hosiery.

Their new "Bi-knit" fabric is described in the New Machinery Department elsewhere in this issue.

Within the past year this concern has succeeded in so simplifying the construction of their bar stitch and cross stitch crocheting machine that this line of machinery can be offered at about one half what it has hitherto cost, and yet the product has been improved in several particulars. They are now ready to furnish machines of this class which make either bar stitch or cross stitch finish for ribbed underwear, and take either the wide or narrow braid, and believe that the improvements and reduction in cost will bring these machines into use not only for the high grade underwear, but in connection with the cheaper line of goods.

They have brought out an entirely new Automatic Seamless Hosiery Machine, which is extremely simple, and besides other improvements, possesses one important feature—viz.—it is capable of being used for transfer work in two ways, either by transferring from the points of a point-ring, or by interchanging the cylinders and running the work directly upon the hooks of the same, and inasmuch as it seems to be a well established fact that for some classes of goods one of these methods is preferred over the other, the combination of the two in the one machine has a readily recognized value.

MCMICHAEL & WILDMAN MFG. CO., NORRISTOWN, PA.

This company, as the result of many years' experimenting, has brought out a new splicer on entirely new principles. The splicer is independent of the thread guide and does not depend on the main yarn to attract the broken ends of the splicing yarn. The mechanism is simple and all parts are interchangeable. This company has also put on the market the Adams fu-

tomatic rib and top cutting machine. This machine cuts all fabrics with or without welts, doing clean work, which requires no trimming after once having passed through the machine. It has a large capacity, and is a machine which is likely to find an important place for itself in the mill.

THE RUTH AUTOMATIC KNITTING MACHINE CO., NORRISTOWN, PA.,

have brought out a new line of rib knitting machinery for hosiery and underwear, which has been described in previous issues of this magazine. Realizing that the trend of fashion at the present time is toward fancy and lace effects, they have paid especial attention to the developments of this line of work, and their machines can be adjusted to knit lace effects or plain ribbed with heavy or light yarns. This special feature of quick change is one of the important points of the machine. They also have a new splicer, which is positive and simple in construction, and is especially recommended for boys' and children's goods. An automatic wing sleever is another specialty which they have brought out, which operates with or without a welt successfully.

HOMER P. SNYDER MFG. CO., LITTLE FALLS, N. Y.

During the past year they have spent a great deal of money in making special templets and jigs for the purpose of making every part of their machinery interchangeable and in perfecting the models of their various machines. Their line includes circular automatic underwear machines and a sleever, and they have quite recently brought out a winder suitable for cops or cones. This company has had a very busy year and have many orders still ahead of them.

STAFFORD & HOLT, LITTLE FALLS, N. Y.

This concern has had a very busy year on their regular line of machinery, and have perfected a new machine which is now almost ready to bring on the market and which will be announced and described in a later issue.

LAMB KNITTING MACHINE CO., CHICOPEE FALLS, MASS.

This company has some new machines that are not quite ready to be put on the market. The demand for their regular machinery has kept them busy, and the acquisition of their former plant by the American Bicycle Co. made it advisable to erect a new building, which is now in process of construction and which they hope to occupy by the 1st of August. This company has a steady demand for their particular type of machinery. One of the new things that they have brought out is an automatic striping machine and another for two feeds, in order to meet the demand of the trade.

CHARLES COOPER, BENNINGTON, VT.

Mr. Cooper has during the past year made a number of important additions to his line of machinery, including a full and complete line of automatic latch needle machinery for underwear, as well as latch needle ribbers which he has constructed under new designs. He has also perfected a striping attachment for plain or rib cylinder spring needle machinery, and has brought out a rib cutting and folding machine for cutting and folding the double cuff used in fleece lined underwear. It has been a busy year in this shop, and orders have come not only from this country, but from abroad, for his spring needle cylinder rib machinery and other specialties. He has recently opened an exhibition room in the Bourse Building, Philadelphia, and has established branches with representatives in charge in Amsterdam, N. Y., Manchester, Eng., and Paris, France.

THOMAS KENNEDY, COHOES, N. Y.

Mr. Kennedy builds special machinery in connection with the finishing of knit goods, and the past year has made important improvements in his automatic band, folding and cutting

machine and power neck marker. This was described at some length in a recent issue of the Textile World. The past few months he has had all he could do to keep up with orders on this machine.

E. M. ANTISDEL, UTICA, N. Y.

Mr. Antisdel has brought out what is almost an entirely new model of the Johnson vertical cloth dryer. The improvements have been in connection with the gears and the pivot which the frame revolves on, and the patterns for frame work have been changed. This machine, which has been only a short time on the market, has come into extended use, and the changes made are the result of practical experience gained in mill work.

UNION BUTTON SEWING MACHINE CO., BOSTON, MASS.,

has put on the market an attachment to their button sewing machines for automatically trimming both the upper and lower threads after the button is sewn on, leaving the stitch on top and bottom with a smooth finish without ragged ends, and at the same time securing the ends of both threads so that the operator is relieved of their care and the next stitch is perfectly made.

UNION SPECIAL SEWING MACHINE CO., CHICAGO AND NEW YORK,

have brought out a new overedge machine, which they call a single interlock machine. This is especially adapted for underwear and hosiery, and is designed for overedging, hemming and seaming. It runs at high speed, and gives an elastic seam, hem or edge finish. It is described at greater length elsewhere.

THE ARNOLD SEWING MACHINE CO., NEWARK, N. J.,

have brought out an improved overedge seaming sewing machine, combined with a trimmer. The machine may be had, however, either with or without a trimmer. It uses a straight needle, and special effort has been made to maintain simplicity of construction, as well as durability and high speed. This machine has been described at length in this magazine.

THE RODNEY HUNT MACHINE CO., ORANGE, MASS.

have brought out an improved bleaching machine for cotton knit goods and also a new dyeing machine for knit goods in the piece, which is described at greater length elsewhere.

A. N. DUBOIS, PHILADELPHIA, PA.

Mr. Dubois has brought out a new hosiery oxidizing machine for the improvement of fast black dyeing. This oxidizing machine was described at length in a previous issue of this magazine.

The Union Special Single Interlock Machine for Seaming, Trimming and Covering at One Operation.

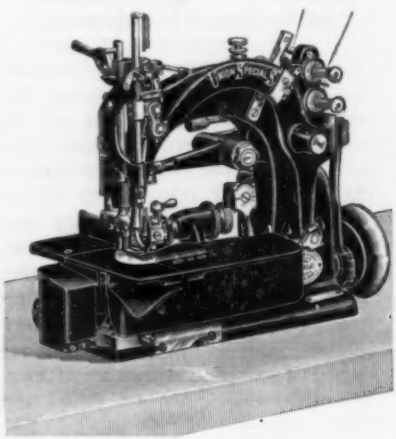
The finishing room of an underwear plant is, and has been perhaps, the most interesting department in the knit goods manufacturers plant. It is illustrative of the skill and cleverness that has placed this country in the lead in the matter of sewing machines, and by the same methods in other industries made us the wonder of foreign countries. In this connection, it may be stated that in every foreign country, where machines are employed in the manufacture of knitted underwear, may be found the many types of machines made by the Union Special Sewing Machine Co.

For many years, the styles of finish on underwear were few; then the manufacturers ran "in season" and "out of season" without hesitation, no fear of change of style holding them in check. When the styles of finish began to multiply, the demand for special machines increased. When competition and other reasons forced the price of underwear down, a demand came for high speed machines. Through all these many phases, manufacturers of knit goods demanded of builders of sewing machinery not only better and speedier machines, but, fi-

nally, machines that would do in one operation what formerly required two and even three distinct operations. The manner in which the builders of machines responded, is a great credit to their mental and mechanical resources.

When an old timer reflects, for instance, on the difference in seaming now, and when the Grover & Baker and Lamb machines, were first in use, and the woman behind the shears piled up quantities of waste, he is amazed, and either voluntarily, or involuntarily, credits the mechanic who produced the machines, with a skill and cleverness almost beyond natural.

From the "woman behind the shears" seam to the present covered seam is a long step, a great result



accomplished. To the present generation the Union Special Trimmer is a matter of course, though to an older generation the time was when that too was a wonder.

The new Single Interlock machine with trimmers, for seaming, trimming and covering at one operation, seems to be the culminating point in this direction, inasmuch as these new machines run as fast as the expert operator can handle his work, and makes a seam that is completely finished. It is built on the well known lines of the regular Union Special machines, which are familiar to every knit goods manufacturer here and abroad, which fully guarantees the efficient performance of the machine and its durability. It makes the overedge two thread stitch with a two implement looping and thread carrying arrangement. The trimmer is arranged to be thrown into or out of operation at the will of the operator, and the machine can be used without, if desired.

Another feature is a double cloth plate, one part of which is detachable, and, when removed, leaves a small throat plate extension, around which cylindrical work can be operated without having to fold or crimp the goods. It has a practical adjustment of the feed to prevent puckering the edges of light slazy fabrics. The distance of the needles from the edge of the fabric for wide or narrow stitch is adjustable and can be easily and quickly changed at will of the operator, while the machine is in motion.

The thread carrying looper is mounted in the head at a slight incline from a vertical position, and thread, like that used to make lisle underwear, can be successfully used, either in the needle or looper or both, as well as the roughest and most elastic yarns used in woven or knitted fabrics. The elasticity of the stitch equals the full stretch of the goods, and the strong double thread stitch with its smooth covered finish makes a seam long desired by knit goods manufacturers, and is peculiarly adapted to their needs.

Samples of the interlock work and further information may be obtained at any of their offices, or by writing the Union Special Sewing Machine Co., 75 Kinzie Street, Chicago, Ill.

—The miser leaves all to his heirs, except the regrets.—Petit-Senn.

—One willingly acknowledges small favors; it is not worth while being ungrateful.—Petit-Senn.

—The envious seem to think that credit given to others is taken from themselves.—Petit-Senn.

A Guide to Weaving.

BY IVO KASTANEK.

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Introduction. Our subject, weaving, may be divided into three parts: 1. Intersection of two systems of threads running at right angles to each other and forming a woven fabric; 2. The dissection of a fabric to determine the

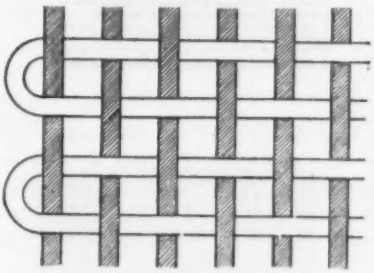


Fig. 1.

method by which its two systems of threads are interlaced; 3. The mechanical operations by which yarn is converted into a woven fabric.

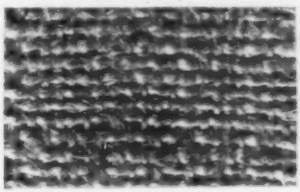


FIG. 1 A.

The first division, relating to shaft weaving, will be treated in the following pages, and only such fabrics will be considered as are made by the sim-

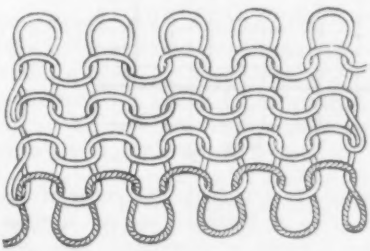


Fig. 2.

ple interlacing of two systems of threads running at right angles to each other, such as the one illustrated at Figs. 1 and 1a. By this limitation in the scope of our treatise, a number of fabrics will be excluded from con-

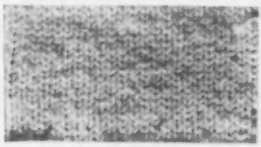


FIG. 2 A.

sideration, among which may be mentioned:

1. Knitted fabrics, formed by the successive looping of one continuous thread, Figs. 2 and 2a; 2. The various kinds of lace and braid; these are formed by intersecting several systems of yarn at various angles to

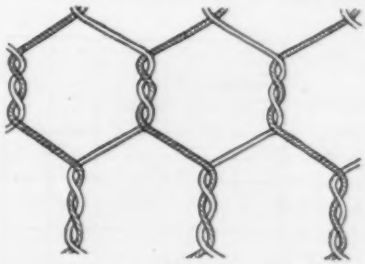


Fig. 3.

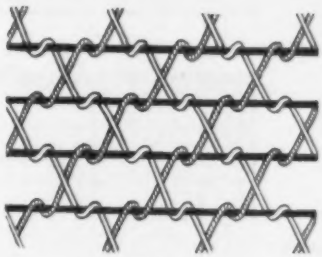


Fig. 4.

each other, Figs. 3, 4 and 4a; 3. Felt, paper and the like, which are formed, not by intersecting threads, but by the bringing together of individual fibres.

Gauze or leno fabrics, Figs. 5 and 5a, are woven on a loom, but will be treated in another work.

In a fabric composed of two systems of yarn intersecting each other at right angles, the yarn running

lengthwise of the cloth is called the warp; that running crosswise, the filling, weft and woof. The fabric is

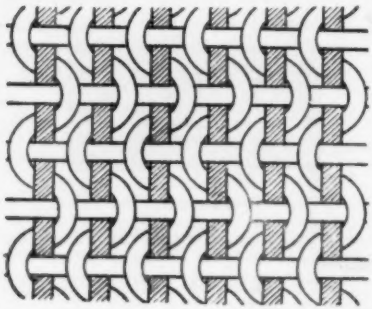


Fig. 5

formed by each thread being brought above or below the threads of the opposite system according to an established order, covering a certain number of threads called the pattern.

The plan or draft of a weave is sketched on design paper, Fig. 6. (8 by 8), Fig. 7 (8 by 14), Fig. 8 (8 by 16), Fig. 9 (10 by 10). The space between two adjacent upright lines represents a warp thread, and that between two adjacent horizontal lines a

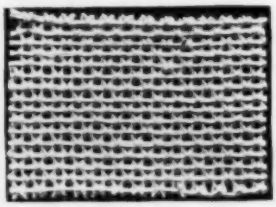


FIG. 5 A.

filling thread. At the intersection of a warp and a filling thread, a cross or dot is marked on the square when the warp is above the filling; when the warp thread is under the filling the square is left blank. The ratio of the number of upright lines per inch to the number of horizontal lines per inch depends upon the threads of

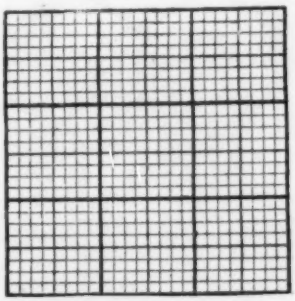


Fig. 6.

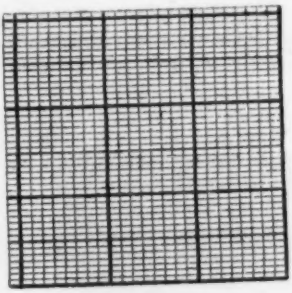


Fig. 7

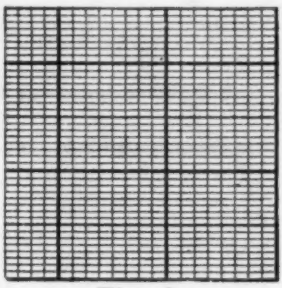


Fig. 8.

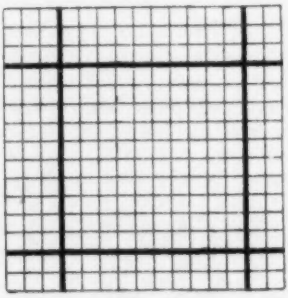


Fig. 9.

warp and filling per inch in the goods. To facilitate the reading of the draft, one line is made heavier than the other at regular intervals.

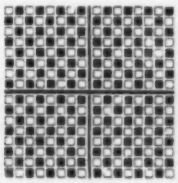


Fig. 10.

In weaving, the warp threads are arranged in lines parallel to each other and lying in one plane; they are

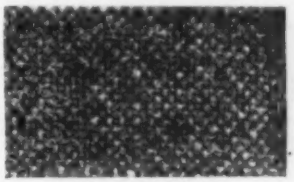


FIG. 10 A.

drawn through the eyes of heddles or mails, which are supported either in harness frames (shafts) or by cords connected with hooks.

All warp threads that intersect the filling threads in the same way can be operated by the same shaft or hook, consequently, there must be employed for weaving a fabric at least as many shafts or hooks as there are threads intersecting the filling in a different order. In practice, more shafts or hooks are used for the warp than the weave actually requires. There must be as many filling spaces or bars in the weave draft as there are threads in the filling pattern.

The manner of distributing the warp threads among the shafts and hooks is called the drawing-in draft. When the pattern is small enough, it can be woven on what is called a dobby loom, which has but a small number of shafts. If the pattern is larger than can be woven on the dobby loom, a jacquard motion is employed. The manner in which the warp threads are connected with the hooks or shafts of a loom is called the tie-up. The number of different effects or designs that can be made increases with the increase in the number of threads in the pattern.

Weaves are classified under a number of sub-divisions, each one having a typical or ground weave, from which others are obtained by systematic alterations of the ground weave or by combination with other ground weaves.

GROUND WEAVES AND THEIR DERIVATIVES.

Plain or Cotton. This is a weave in which the intersection of the warp and filling is repeated at each second thread. This makes the number of intersections greater than in any other weave. Figs. 10 and 1a show a plain weave. One repeat of the weave shown in the lower left hand corner of Fig. 9, is indicated by the sign (x)

Fig. 11.

Fig. 12.

being used in place of black squares where the warp is above the filling.

The position of the warp and filling threads is seen best by means of a sectional plan of the cloth in the direction of the filling or warp respectively. Figs. 11 and 12 show cross sections of a plain weave, the ends of the warp being represented by the small shaded circles; a section taken lengthwise, i. e., with the warp, would

be the same. Both sides of a fabric woven with a plain weave always have the same appearance.

1. *Basket or Panama Weaves.* These are weaves where two or more adjacent warp or filling threads intersect the opposite system of threads in the same order. Figs. 13 and 13a show a basket weave in which two adjacent threads work together; this is usually called a four leaf basket, since there are four threads in the pattern. Fig. 14 is a six leaf basket, in which three adjacent threads work together; Fig. 15, an eight leaf basket, in which four adjacent threads work together. Other weaves of this class are shown at Figs. 16, 17, 18 and 19.

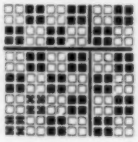


Fig. 13.

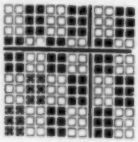


Fig. 18.

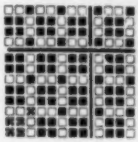


Fig. 19.

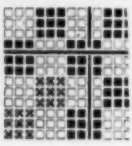


Fig. 14.

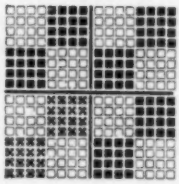


Fig. 15.

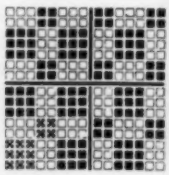


Fig. 16.

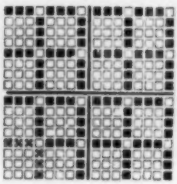


Fig. 17.

Weaves like the one at Fig. 18 are used when the fabric contains more threads per inch in the filling than in the warp, or in other words, when the warp is more loosely set.

Although the plain weave and basket weaves can be woven on two shafts, the number actually used is regulated by the threads per inch, or, in other words, by the set of the warp. The more threads there are in the warp, the more shafts must be used, that there may not be too many heddles on one shaft and that the warp yarn may not be chafed in weaving.

To prevent drawing in of the filling at the sides when weaving with basket weaves, the selvage is woven with a plain weave. One thread woven in the selvage with a plain weave and called the catch thread, is sufficient for this purpose.

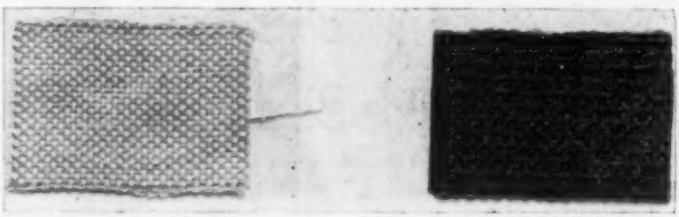


FIG. 18 A

FIG. 17. A

Figs. 20 and 21 show cross sections of a four leaf basket weave; Figs. 13a

Fig. 20.

Fig. 21.

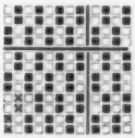


Fig. 22.

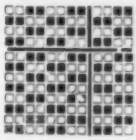


Fig. 25.

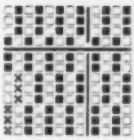


Fig. 23.

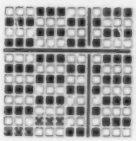


Fig. 26.

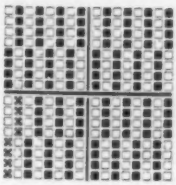


Fig. 24.

Fig. 28.

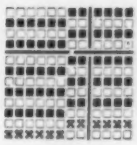


Fig. 27.

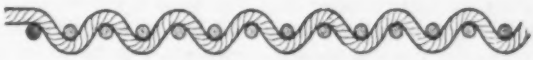


Fig. 29.

and 17a show the cloth corresponding to Figs. 12 and 16 respectively.

2. *Ribs.* If two or more filling threads are woven in each shed of a plain weave, a ribbed effect running crosswise of the cloth is produced; if

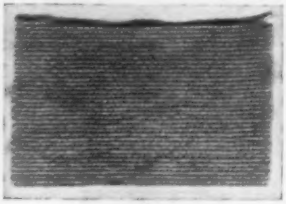
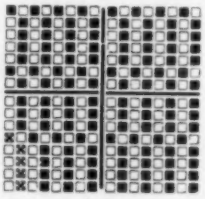


FIG. 23 A.

two or more warp threads are drawn through the same heddle, a ribbed effect is produced with a plain weave,

FIG. 30.



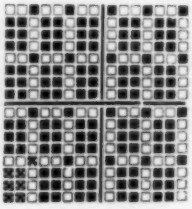


FIG. 31.

but running lengthwise of the cloth.

Rib weaves are either plain or mixed.

A plain rib has the same number of threads working together to form the rib, and, consequently, the ribs are all alike.

A mixed rib is one in which the threads working together to form the rib, vary in number, causing the ribs to vary in size.

Rib weaves are called cross ribs or long ribs, according to the direction in which the rib runs.

In cross ribs, only the warp threads come to the surface. In long ribs, only the filling threads float on the face.

(a) Plain Ribs. (Cannele.) Figs. 22, 23 and 24 are plain cross ribs. In Fig. 22, two filling threads are woven in each shed; this is, therefore, the simplest of the three.

Ribs are made heavier either by weaving more filling threads in a

FIG. 30 A.

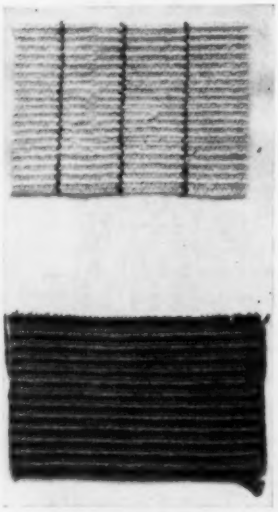


FIG. 31 A.

shed, or by using a coarser filling yarn. Instead of using a heavier filling yarn, which generally causes uneven ribs, it is better to use a fine yarn with two or more threads wound together on the bobbin.

Figs. 25, 26 and 27 are long ribs. Fig. 25 is also called a twist weave. Fig. 28 is a section taken lengthwise, and Fig. 29 a section crosswise of the cross rib, Fig. 22, which is made with two picks in a shed. Fig. 23a shows the cloth corresponding to Fig. 23.

(To be continued.)

Improved Bleaching and Dyeing Machines for Knit and Other Goods.

In the June issue, we noted under New Machinery and Processes, two machines recently brought out by the Rodney Hunt Machine Company, Orange, Mass., and which are shown in the accompanying illustrations.

The first, Fig. 1, is a piece dyeing machine built in accordance with the most approved principles. The goods falling from the reel strike the curved back and then slide easily to the bottom and front of the machine, where they are in a position to be again carried over the reel without tangling or knotting up. A wooden slat partition

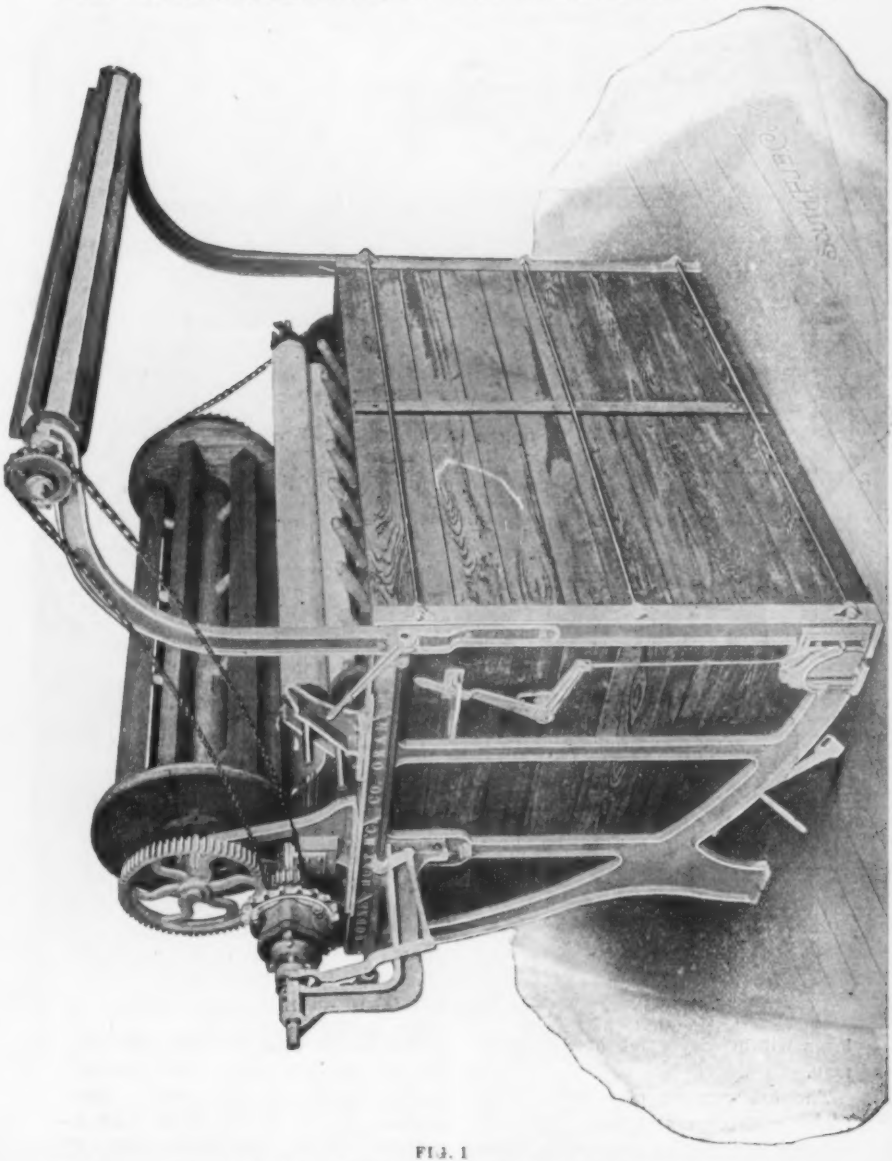


FIG. 1

is put vertically in the front part of the tub, allowing space for steam pipes and the introduction of dyes. At each end of the machine is placed a brass draw-off gate, operated by a lever within easy reach of the workman.

The tub consists of a heavy iron frame with cypress lining. The reel is made entirely of wood with brass screws, and the main shaft extends through the oak centre. This construction removes any danger of rust spots getting on the goods.

Before passing over the reel, the goods run between a pair of six inch sprocket driven squeeze rolls, whose action results in a thorough penetration of the dye liquor, and uniform shades throughout the pieces. The machine is driven by gears and a sprocket wheel connected with a clutch. If desired, it can be arranged for driving with a belt.

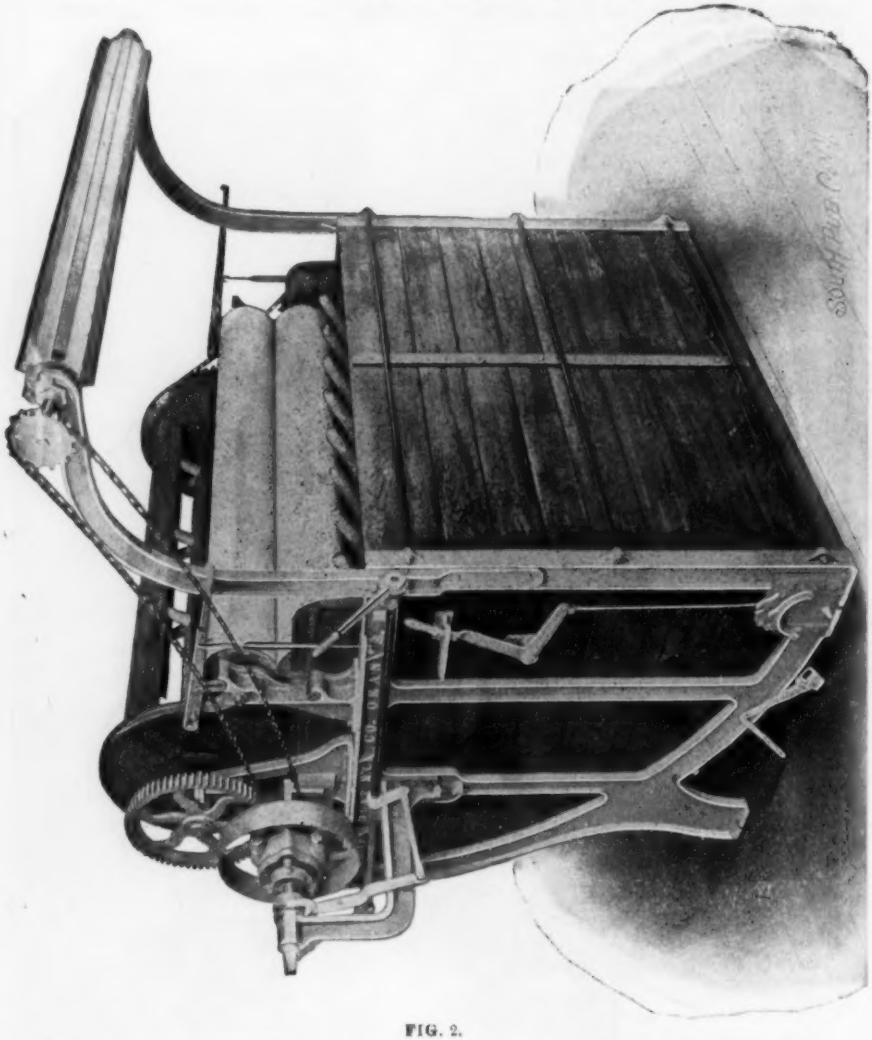


FIG. 2.

The second machine, shown at Fig. 2, is used for bleaching cotton knit goods by the chloride of lime process. It is constructed so as to permit of lining with Portland cement. The goods run between ten inch sprocket driven squeeze rolls, on which the pressure is adjusted by brass springs. This bleaching machine is driven either by a pulley or sprocket wheel connected with the reel by gears.

The builders also make a machine for bleaching by the peroxide of sodium and bisulphate of soda processes; they also build a machine similar to the one shown in the illustration, but without an iron frame. Both the dyeing and bleaching machines are built in sizes to suit the requirements of different dyehouses.

The Rodney Hunt Machine Company also build blue vats, dye tubs and tanks for various manufacturing purposes. They make a rotary garment washing machine for knit goods, in addition to their well known line of wool and cloth washers, fulling mills, etc.

—We consider those wrong who do not agree with us.—P. J. Stahl.

—The upright judge lives to serve his country; the unjust serves his country in order to live.—Petit-Senn.

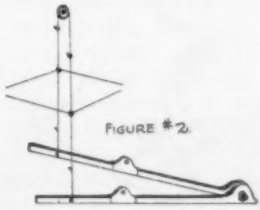


FIGURE *2.

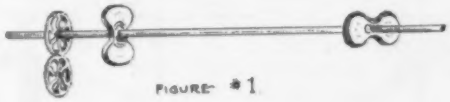


FIGURE *1.

FIGURE *3.

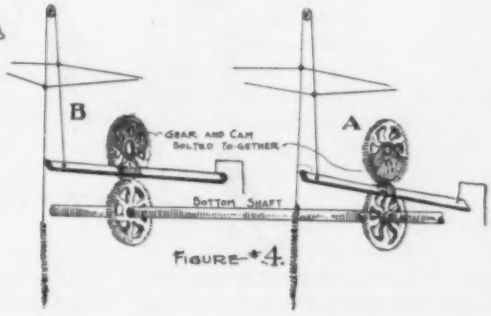


FIGURE *4.

Making Good Flat Selvages.

BY ARTHUR DYSON.

There are several American methods which are entirely satisfactory in respect to making a good flat selvage, three of which are as follows:—

1. To make a 1-1 selvage, a small gear is placed on the bottom shaft on the inside of side of loom. Running from the sides, across the loom, is a thin rod with another gear fastened onto it by means of a set screw, and on this rod at each end is a pair of tappets or cams. (See Fig. 1.)

One set of cams is arranged opposite to the other, thus changing when the shuttle has just passed through the shed, and before its return. A pair of treadles are placed in the loom girth, and from these are passed straps to the selvage harnesses, and a strap is attached to the top of the selvage harness and over a small pulley attached to the loom arch, and then connected with the other harnesses. (See Fig. 2.)

The only change necessary to run a 2-2 selvage is to have the gears in proportion of 2 to 1 in the number of teeth used.

2. This motion is similar, but very much simpler, inasmuch as the rod under the loom is dispensed with, and

only one treadle is used on each side; the method is as follows:—

Instead of one gear on the bottom shaft and one on the rod, there is a gear on each side of the loom on the bottom shaft, and connected to the side of the loom is another gear with a cam attached (see Fig. 3); this cam depresses a treadle similar to that used on the other device, but the opposite selvage harness is attached to a strap and spring from the floor, so that when the cam depresses the treadle, the other harness is raised and the spring stretched (Fig. 4a); on the reverse motion, the spring pulls the harness down again (Fig. 4b). Of course, these cams are very easily adjusted, and are the simplest mechanism for a selvage motion. (See Fig. 4.)

Another mechanism is arranged to do away with the treadles and gears, and in place of these there is a cam attached to the outer end of the bottom shaft, by means of a set screw fastened in the end of the shaft. A casting with two lugs attached, one at each end of a groove, is so adjusted that it moves freely in a horizontal line, but cannot be raised or depressed; this casting is fastened to an angle iron, which is bolted on a thin rod, which goes across the loom, and on this rod are attached two rolls. A strap is bolted on each of these rolls, and to this strap is attached the selvage harness, the top strap going over a small roll similar to the other devices. As the cam revolves with the shaft, it oscillates the small rod, and thus the shed is formed. (See Fig. 5.)

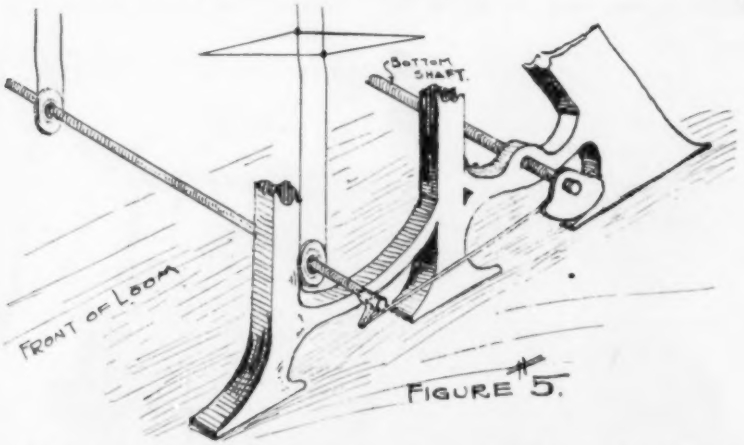


FIGURE 5.

Lace Attachment for Knitting Machines. G. Stibbe & Co., Leicester, Eng., are placing on the market a knitting machine for producing lace effects. The construction is too detailed for a description here, but the builders claim for it a large production and automatic operation.

Steam Superheater. The Cruse Controllable Superheater Co., 5 Blackfriars St., Manchester, Eng., are introducing a steam superheater by which they claim that the maximum temperature desired can be maintained. This regulation is effected by passing the steam over pipes filled with water. The absorption of heat by the water columns regulates the temperature of the steam.

—Man is by nature an animal that laughs.—Regnard.

—Among men, antipathy is more irreconcilable that hate.—de Lescure.

—It is pleasant to be witty. One always has something stupid to say. —Beranger.

Uniformity in Silk Reeling.

The irregular size and length of silk in skeins from different parts of the world and the poor traverse adopted, are sources of much expense to silk manufacturers. Not only do the skeins coming from different countries vary, but also those from reelers in the same country differ in weight and length. A committee of silk throwsters was appointed by Silk Association of America last November to investigate the difficulty and make recommendations. Its report has recently been published and recommends the adoption by silk reelers throughout the world of a standard skein of the following description:—

Length: Skein to measure 56 to 58 inches in circumference.

Width: Width on reel to be three inches.

Traverse: Threads to make 33 complete crossings across the skein and back in 50 revolutions of the skein, as shown in the accompanying drawing.

Size: Skeins to contain silk to the weight of 2½ to 3 ounces, the lighter for fine sizes, the heavier for coarse sizes, but in no case to exceed 3 ounces.

Skeins: Always single skeins laced through in two places directly opposite each other.

Such skeins will hereafter be recognized by the Association as the "Standard American Silk Skein," but such recognition does not imply that this skein is required in order to make a good delivery, except and unless the contract specifically calls for the "Standard American Skein."

The report of the committee states that "no two kinds of raw silk that come to this market are alike in character, length of skein, or traverse," and that in working, some cost more than double that of others. The absence of uniformity represents considerable increase of expense in throwing silk into tram and organzine (especially tram), and it is this increase and really unnecessary expense which is preventable by reelers, that we desire to minimize and possibly entirely overcome.

It may be stated here that this saving in cost of "working" silk would in the first instance benefit the reelers by reason of increased demand for filatures known commercially to be uniform in length of skein and character of silk. Many filatures, especially in Japan, have recognized and have profited by this knowledge.

The relative quantities of silk supplied to the United States by Japan, China and Europe are as follows: Japan 46 per cent.; China, 30 per cent.; Europe 24 per cent.

In the census year, 1900, the American silk industry consumed, as shown by the census returns, 9,760,770 pounds of raw silk, valued at $40,688,273.

The importance of the United States as a consumers' market is therefore conclusively shown.

The country, or countries, that will heed and act upon the recommendations of this report, will, it is safe to say, materially increase its export of raw silk to the United States.

The committee make four recommendations as follows:—

A. Uniformity in Diameter or Size of Skein. Sample skeins are submitted herewith to show the utter absence of uniformity by the reelers of different countries. These samples are taken from recent receipts by us in the ordinary course of business, and require swifts from 18 to 36 inches in diameter.

Lack of uniformity subjects the "throwing" department of the industry to many and considerable losses: in waste, in maintaining stocks of swifts of diverse sizes, in extra labor requiring frequent changes of swifts, and in increased danting. "Danting" represents the additional labor and expense made necessary by changing swifts and adjusting a greater number of skeins.

The standard sizes of swifts in American mills are 22 and 24 inches,

that is, the skein to measure 56 to 58 inches in circumference.

Japan Reelers. The reelers of Japan silks conform more nearly to this standard than do the reelers of Canton and Italian silks.

China Reelers. The reelers of China steam filatures are quite uniform in the diameter of their skeins, but are apt to put too little silk in their skeins, which makes them, in throwsters' parlance, too "skinny"; by this is meant too little yardage, or weight of skein.

There is absolutely no uniformity in the length and size of Canton skeins.

Italian Reelers. Many Italian reelers are approaching uniformity in size or diameter of skein, but there is still room for great improvement there. Most reelers of Italian and Cevennes silks are entirely without uniformity, some skeins requiring swifts as small as 18 inch diameter, while others require 24, 26 and even 28 inch diameter. We have seen in a number of instances skeins of Italian silk requiring a 36 inch swift, but it goes without saying that such extremes require a material concession in price in this market.

B. Uniformity in Weight of Skein. Skeins to contain silk to the weight of 2½ to 3 ounces, the lighter for fine sizes, the heavier for coarse sizes, but in no case to exceed 3 ounces.

C. Uniformity of Cross-lacing. Two in each skein, smooth and not too hard twisted.

D. Uniformity of Traverse. Threads to make 33 complete crossings across the skein, and back in 50 revolutions of the skein, as shown in the accompanying blue print.

The relative importance of these recommendations to reelers in the various countries is shown by their respective contribution to the current annual supply of raw silk throughout the world, viz:

China, say 40 per cent.; Japan, say 20 per cent.; Italy, say 20 per cent.; Levant, say 10 per cent.; France, Austria, Spain and India, say 10 per cent.

STANDARD AMERICAN SILK SKEIN.

Of the total supply, say 16,000,000 kilograms or 35,000,000 pounds, the United States consumes annually, say 30 to 33⅓ per cent.

It should be said in conclusion that the sizes of silk most in demand in this market are 13/15 deniers. Low grades and fine sizes, as 10/12 or even 11/13 deniers, are not much used by our broad silk and silk ribbon manufacturers, although the tendency is undoubtedly toward the use of finer sizes.

Picking and Carding—II.

IV.

BY SAM DRIVER.

(Continued from June.)

(Copyright, 1902, Guild & Load.)

Loose sheets, blisters, cylinders out of true, a fancy that winds, high wire, burs and shives on the rings, too long a sweep on the eccentric stroke, running the doffers too high for the speed of the cylinder, fancy teeth laid too far forward, all these will cause twits. When the ring doffers are set too close to the cylinders, the stock is pressed in the rings harder and, therefore, is more difficult to doff and twits are thus caused.

Bad licker-in and feed rolls cause lumps and twits. These are very important parts of a finisher card for getting off good work, and are the most frequently neglected. Any old thing seems to be good enough for feed rolls on Apperly feeds, such as old licker-in clothing. It ought to be the other way; there ought to be the very best of clothing on licker-in and feed rolls to avoid lumpy and twitty roving; an extra supply should be always on hand ready for an accident. Feed rolls should be set well into each other, and all crushed down wire should be set up to avoid lumpy and twitty roving.

Making the roving finer than the quality of the stock warrants will make twitty roving.

The carders are not always to blame for bad work, since they cannot always get what they want to remedy defects. Superintendents are sometimes to blame, and it would be wisdom on their part to furnish the carder with everything necessary to remedy these imperfections. These things are more necessary on the finisher card than on the first and second breaker. If the fancy runs too slow, the cylinder will fill up with stock which is always the longest staple, for it is always the longest wool that laps.

The card cleaners were going along as usual with their daily routine. They cleaned everything on the finisher except the strippers and doffers. I asked them why they did not strip the doffers.

"Why," they said, "we never strip the doffers until they get so full that they will not run any longer."

"Is that so."

"Yes."

"Well, strip them out and let's see what they will do."

By this time Pete, the second hand, came along and said,

"Are they stripping the rings?"

"Yes, I told them to."

"My God," he said, "we won't get the ends before noon."

It was then 9 A. M.

"We never strip the rings until they get so full we can't run them any longer," he cried.

As the card was started up they all looked amazed when not one end ran back over the doffer.

Why did they not run back?

Because I had done something to the fancy and doffers and wipe roll that they had not noticed.

What did I do?

I simply reset the fancy so both sides were alike. I reset the doffers, which were set so close I could not get my finest gauge through. The cylinder was pressing the stock too hard into the doffers. The little stripper placed under the fancy to keep the flyings down on the finisher, was all

covered with gum, so that it pressed against the cylinder, pressing the stock into the cylinder again after it had been once raised by the fancy. This was the cause of the whole trouble with twitty work in this card room.

I have found the fancy strippers in this condition in several mills. It is strange that carders fail to see these little things; it is the little things that amount to great things in running a card room. It is not the iron frames, fancy arches and nicely painted cards that do the work; it is the man that knows how to card that does the work.

What have wooden or iron frame cards to do with the carding? There is just as good work and fine work coming from wooden frame cards to-day, as there is from iron frames. Wooden frames have nothing to do with carding; it is the wire and the man that knows how, that does the carding.

On some qualities of stock we get now-a-days, I think less wire would be far better.

As the rings are in such bad shape, I am having the second hand and a grinder go through them quick. At the same time I am looking after the little things. This is a 24-set mill, and we can't think of stopping to grind every card. The cards are in pretty good shape, as regards grinding, but I am resetting them as the batches run out. I am having all the workers and stripper bearings cleared out, and then I set the workers, strippers, doffers and fancies before the card has been stripped. By setting in this way I am not so liable to get too close.

"WE WON'T GET THE ENDS BEFORE NOON."

We are getting along very well with the rings, and it is beginning to tell for the better in the spinning room; we are getting rid of the twits. I am going down in the picker room for a while, to see how Bob is getting along.

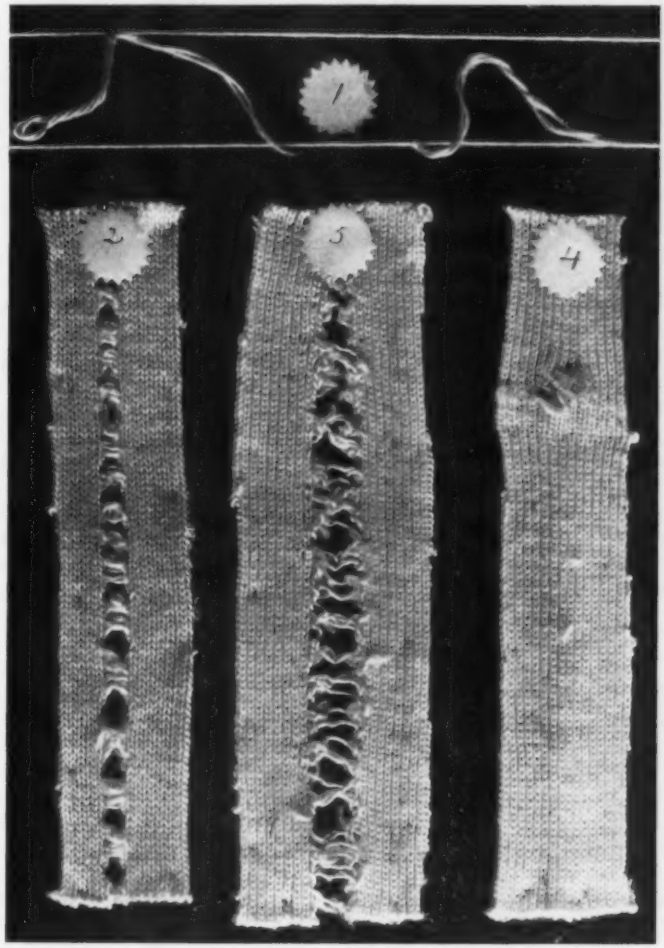
(To be continued.)

Waste in Hosiery Mills.

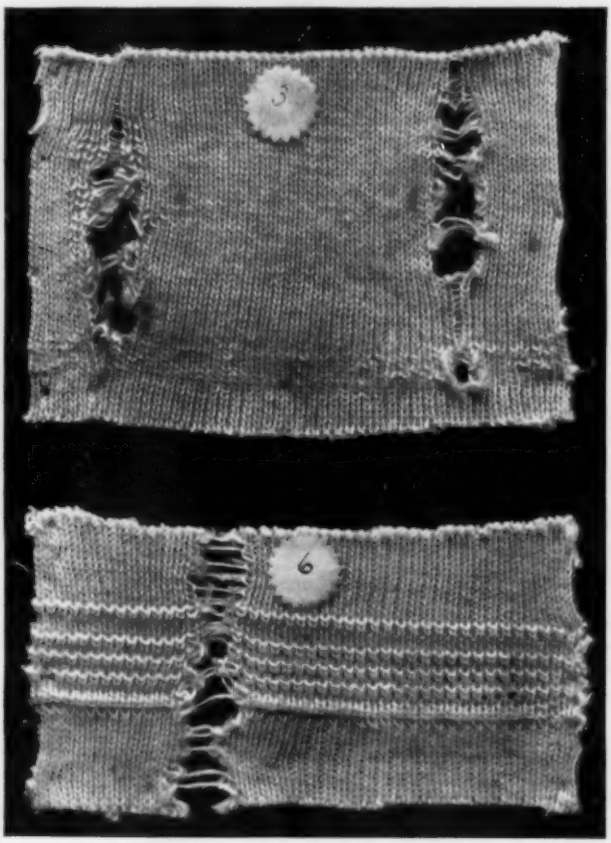
BY FOREMAN.

Waste of material in the different processes of the manufacturing of hosiery is a serious problem which all manufacturers have to contend with, even in well equipped and well regulated mills, while the waste made in mills equipped with the poorer classes of machinery is enough to discourage any ordinary man.

There is a great difference in the handling of machinery, a good class of knitting machines poorly or improperly handled is the cause of a great deal of waste and imperfect goods. We will begin with the winding of the yarn; almost every knitter will appreciate well wound yarn, free from knots and other imperfections, which are the primary causes of a lot of the waste and seconds which daily accumulate in a hosiery mill. As the winding is generally done on the piece work system, an operator soon finds that it is much quicker, when an end breaks down, to lay that end on the partly wound bobbin than it is to hunt for the other end and tie the knot, the result being a press-off where automatic stops are not used.



Where the knots are tied, they also discover that it takes time to break off the ends, and in a great many instances they do not even pull the ends through the loop, thus making the bunch larger than ever and a certainty of causing a large hole in the webbing and an even chance of breaking a lot of needles. Fig. 1 shows two



bad knots, which would cause trouble.

All winders have what is called a scraper for the yarn to run through; these scrapers are set just far enough apart to allow the yarn to pass through; consequently, when a knot or bunch of flyings comes along, the yarn will break.

To avoid these breakages and the consequent decrease in the output of the winder, which means less pay, the operator will sometimes, unless carefully watched, allow the yarn to run outside the scraper. A very successful plan to trace such imperfections, where the yarn is to be used in the same mill, is to have each operator's work distinguished by a certain color; chalk of the corresponding color is provided for each operator, and they are required to mark the number of the yarn plainly, on the outside of each bobbin, and low enough down to show the color even when the bobbin is nearly run out.

This method answers two purposes; it prevents the mixing of the different numbers, and also plainly shows who wound the yarn.

After passing the winding, one of the most important requisites is a

good man in charge of the rib machines, for there is no machine that will pile up the waste faster than ribbers poorly handled; unlike the footer, which stops at the end of each stocking, the ribber makes no stops as long as the yarn lasts, and, unless the help is well drilled, a machine will soon spoil a lot of yarn if not properly adjusted. Even with proper adjustments a needle may break unobserved or a rivet work out (we don't all use the milled rivet), causing it to cut the thread either partially or completely. Unless the operator is quick to detect this defect it may run along indefinitely.

Again, a lump may come through even when stop motions are used, breaking off the end of the hook, and if allowed to run add still more to the ever-increasing waste pile.

These little things and numerous others require the watchful eye of the fixer as well as the operator. How often do we on looking over hosiery, especially ribbed hose, notice the great difference in the fabrics, some loose, some tight, some with holes where neither lump nor knot is visible, all showing like an open book the incompetency of the fixer; many firms are great sufferers in this respect simply because they are trying to save a few dollars per week in wages by employing a man who is not capable of filling the position. In reality, they are losing hundreds of dollars and chunks of reputation, in seconds, waste and inferior goods.

We will now let the rib man alone while we find fault with the manner in which the goods are handled in the next process, namely, putting on the foot. This operation, to be done well, requires skill, and in order to have an operative believe that they must become skilled they must know that they are being watched closely; there is nothing more detrimental to the successful manufacture of hosiery than lack of discipline in all the details connected with it.

When we stop to think that in topping a ladies' ribbed stocking of ordinary gauge, 200 stitches must be put on the needles, and that the failure to put on one stitch out of the 200 means a mender, it is evident that careful watching and discipline form an important factor in this department.

Again the ability of the fixer here plays an important part, for, if the knitting machine which produces the foot is not kept in the best condition, untold waste is one of the results, as the breaking of a needle causes an imperfection in the goods; seldom, if ever, was a needle broken without a cause, and it is always policy to find the cause before starting the machine; this done often prevents more serious trouble later.

A careless knitter will also add greatly to the waste by careless handling of the machine, as each stocking knit imperfectly must either go for a mender, or, if too bad to be mended, must be raveled out and added to the waste account.

A large amount of waste is caused by defects in the yarn itself, and our illustrations show clearly the results of some of these defects when they reach the knitting machine.

Fig. 2 shows where a rivet has worked part of the way out of the needle and unobserved has run through several stockings.

Fig. 3 shows where a short, heavy piece of yarn has run in, but, fortunately, has been seen in time to prevent more serious trouble than that of breaking three needles and spoiling a stocking.

Fig. 4 shows where the yarn coming up heavy has carried in the fly collected on the yarn guide; fortunately, doing no more damage than spoiling the stocking.

Fig. 5 shows another heavy piece which, in passing through the needles, has bent the latch of a cylinder needle, causing it to tear the fabric at every revolution.

Fig. 6 shows a heavy piece of yarn, longer than any of the others, but

which has passed through doing no other damage than to break one needle and spoil two stockings.

The Value of Textile School Associations.

No one can glance through the long list of graduates contained in the catalogue of the School of Industrial Art of the Pennsylvania Museum, which includes the Philadelphia Textile School, without being impressed with the influence that such a body of trained specialists is exerting in our textile industries. Eighteen years ago, this pioneer textile institution was started through the enthusiastic and determined efforts of a few Philadelphians, and although loyally supported by many manufacturers, and particularly by the textile machinery builders, we think it is true that for some years the majority of manufacturers, while outwardly wishing it well, secretly questioned the practical value of school training for mill work.

The record of the graduates of this and other textile schools which have since been established is the best answer that can be given to the doubters. These men are filling important positions in textile establishments all over the country, and it is undoubtedly a fact that the average age of textile school graduates is considerably less than of men without this training holding similar positions with corresponding salaries. The benefit of such training is no longer questioned. The manufacturing states have wisely recognized the value of such institutions by contributing to their support. The correspondence schools, conducted on a commercial basis, have undoubtedly also largely contributed to the general recognition of the value of school training for technical work.

The formation within the past years of associations of alumni of these schools is an important step in the right direction. The great colleges of the country which annually send forth their thousands of graduates, receive their greatest inspiration and help from their alumni; indeed, in almost all such institutions, the alumni are the controlling body through their elected representative officials. The loyalty of the alumni to their alma mater is their surest support. The son follows in his father's footsteps, and the older man retains throughout his entire life a warm feeling and active interest in the college where he was trained, and if fortune favors him, frequently contributes to its funds.

There is no reason why strong alumni associations should not be developed in connection with the textile schools. Young men who take the longer terms of two, three or four years, in classes which are small enough to permit close companionship and intimate acquaintance, should in the years of their close association in common study, cement friendships which may well be perpetuated through annual gatherings at commencement time. Such gatherings and the association of the older men with the new graduates are a source of pleasure to the former and inspiration to the latter. They see the practical result of the knowledge that they have been acquiring, and the older men can be of real assistance through their advice and suggestions.

We see no reason why it may not develop that the alumni should have representatives on the Board of Trustees, as in other colleges. Their practical experience of school training applied to mill work should make them valuable members of such bodies.

Several years ago, an association of alumni of the Lowell School was formed, and at its commencement exercises in June of this year a strong alumni association of the Philadelphia Textile School was formed, of which many of the graduates have already become members. We cannot too strongly urge those who have had former connection with any of the textile schools to join the alumni associations that may be formed and

actively co-operate in their beneficial objects. They will themselves be the gainers.

The Murphy Elastic Stitch Sewing Machines With and Without Trimmer.

In order to meet the demand for a simple, rapid, durable and economical sewing machine making the elastic stitch so desirable for finishing knit underwear and hosiery, the Kruse & Murphy Mfg. Co., 455 West 26th St., New York, introduced to the trade some years ago their seam trimming and finishing machines.

Many improvements have been added to these machines by the makers since their introduction in order to give them a wider field in this branch of the textile industry, as well as to adapt them to other lines of manufacture using sewing machines.

The various parts, such as studs, bars, shafts, etc., are well made as to workmanship and material, and are hardened and ground. The different motions are accomplished by a simple arrangement of a few parts, while the joints, links and bearings are provided with means for taking up any lost motion that may appear.

As the parts are made interchangeable and the makers constantly carry a stock of each on hand, they can promise a prompt delivery should it be necessary to supply any new equipment.

The trimmer, which is a very important feature in machines of this character, received special attention from the designer in order to produce a knife cutter that would operate successfully at a high speed on the various grades of fabric sewed, and yet be simple in its construction and have blades that could be easily adjusted and sharpened.

The manner of threading for both threads and the adjustment of the tensions, is so direct and simple that the operator will find no difficulty in becoming familiar with them. The looper is arranged so that it can be thrown out from under the plate and threaded in plain view of the operator.

For the purpose of making a blind stitch required for hemming, the manufacturers of these machines are supplying their trimming machine fitted with a special foot for making this form of stitch, and many hosiery manufacturers now use this machine for welting stockings, since it makes a stitch that is invisible on the outside of the stocking and allows the hem to stretch to the full elasticity of the fabric.

As much of the finishing of knit goods requires a high speed machine without trimmer, the manufacturers supply this machine in this form and adapted to make either a single or double thread stitch. From the fact that the stitch made by their single thread machine is formed by a looper, it will be found to give much better satisfaction on the very thin grades of fabric, as silk, chiffon, etc., than the single thread machines which use the rotary hook to form the stitch.

The Kruse & Murphy Mfg. Co. will be pleased to hear from all the manufacturers in the knit goods trade who are interested in or use this line of sewing machines. By a direct inquiry, a fuller and more practical demonstration of the merits and simplicity of their trimming and finishing machines can be given.

The Evolution of the Hosiery Seam and Hem.

There are comparatively few persons in the hosiery and underwear trade who can realize that but twenty years have elapsed since the introduction of improved sewing machines by means of which the raw edges of knit goods could be trimmed and a strong seam or hem made in one operation. The Willcox & Gibbs Sewing Machine Company's trimmed seam and hem, produced by means of their new trimming machine, about 1880, was a great boon to the knit goods industry in the United States, and the new sys-

tem made immense strides during the succeeding decade. About ten years later a further strong impetus was given to the business through the invention of the W. & G. "Overlock" Machine, which possessed several salient features of great value, for instance:

1. High speed—3000 stitches per minute (50 per second) being the normal rate.

2. Elasticity of stitch in seam, hem and overseam, which was at the same time strong, durable and sightly, and would not crack or break.

3. Double thread overseam, whose successive loops interlock, forming the "Overlock" seam.

4. Trimming of raw edges in one operation with the making of the stitch.

Even a novice in the business can see that a machine possessing these great advantages would be almost indispensable to the manufacturer of knit goods, and that the superior finish of the "Overlock" seam, hem and overedge upon underwear and hosiery would be attractive to the public, and being produced economically, the domestic output could compete with foreign goods to a larger extent than ever before.

The leading mills in the United States at once adopted the "Overlock" system, and the public, quick to appreciate the advantage of a smooth, strong, elastic seam, hem and overedge on underwear, soon began to clamor for it. The last decade of the 19th century witnessed an immense increase in our domestic knit goods trade. This result has come very largely from the fact that our manufacturers gave closer attention than before to the discriminating demands of the trade for a superior quality and finish of garments, and by improved methods of manufacture, including the "Overlock" system of finish, our manufacturers have been able to supply those demands and to compete more successfully with foreign goods.

On the other side of the ocean the "Overlock" machine was also quickly taken up and became immensely popular. In 1899 our Nottingham Consul in a report to the Bureau of Consular Reports at Washington, D. C., said:

"The Overlock stitching device of Willcox & Gibbs has had a phenomenal success since the date of its introduction four years ago. . . . The keen competition among manufacturers has necessitated its use both as a matter of economy and to improve the character of the output for a discriminating market."

In Germany a committee consisting of army officers and headed by the minister of war and the emperor himself, tested the soldiers' underwear and decided upon the "Overlock" system as the best, and an order was issued requiring its adoption for all future army requirements. In Belgium a like order was issued. The United States army and navy officials altered their specifications for underwear a year before the Spanish-American War, so as to include the "Overlock" system, and the strong elastic seam and hem made on the "Overlock" machine were to be found in Cuba, Porto Rico and the Philippines, wherever our brave soldiers and sailors were sent.

The accompanying illustrations show the "Overlock" work very graphically. This work may be described as follows:—

The Overlock Elastic Seam with its strong double thread, elastic stitch and smooth covered finish.

The Overlock Elastic Overedge, producing a strong artificial selvage of neat appearance.

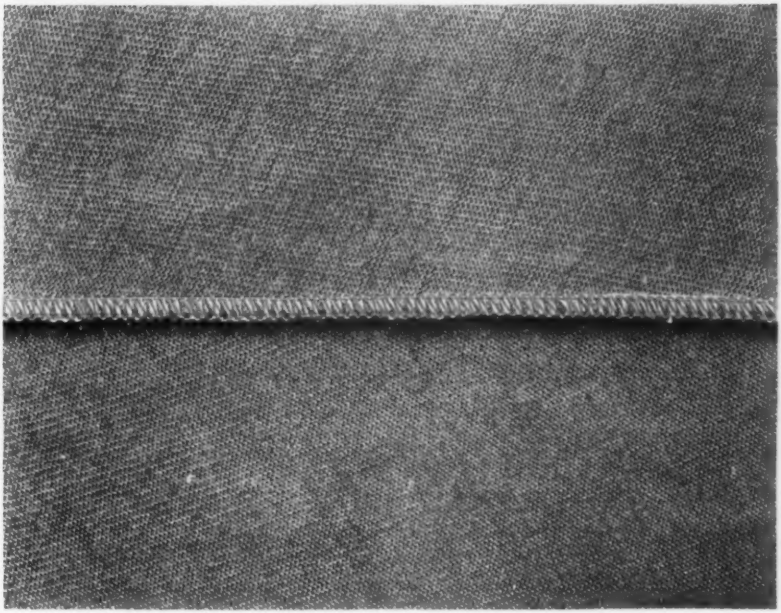
The Overlock Elastic Concealed Stitch Hem, with no stitches showing on the right side. A substantial reproduction of the full fashioned or turned down hem.

Overlock Side Seam.

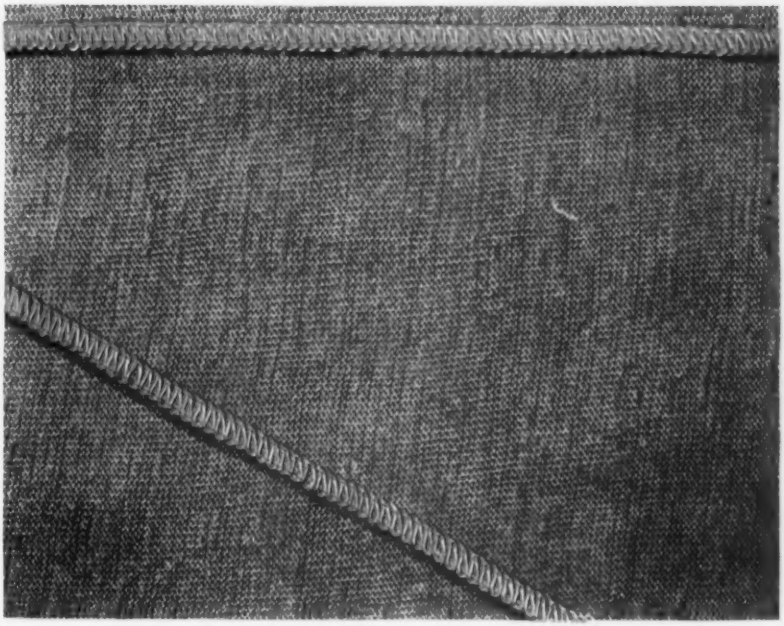
Overlock Gusset Seam.

Overlock Sleeve Seam.

The Overlock Tailor-Made Seam at shoulder and gusset. The Overlock seam is first made and is then felled.

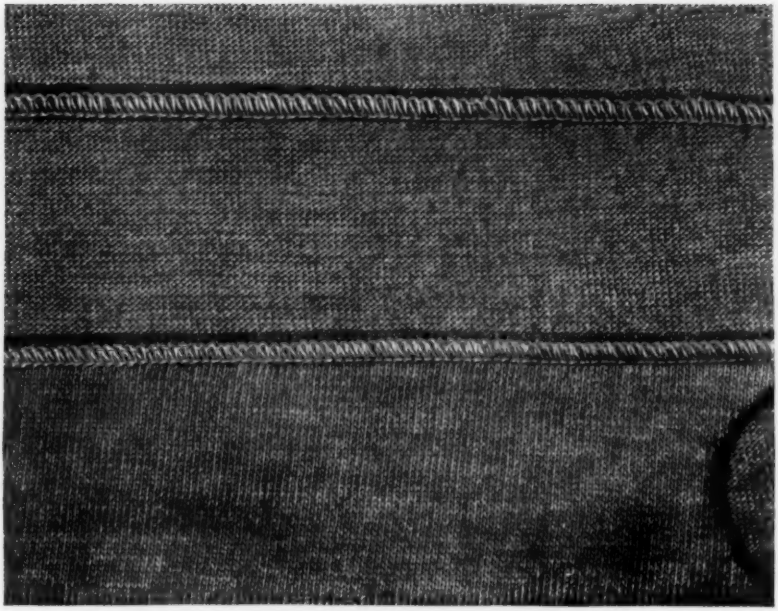


"OVERLOCK" SEAM FOR SLEEVES.

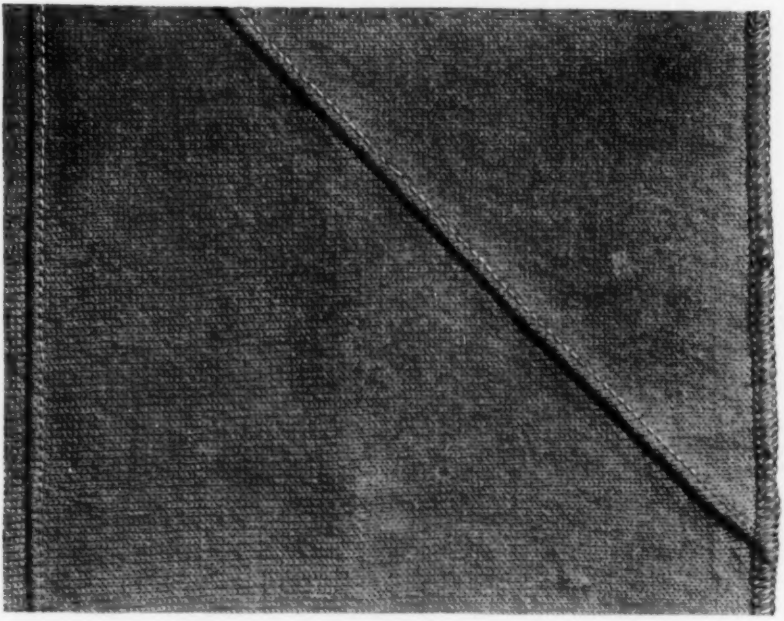


"OVERLOCK" SEAM FOR SIDES AND GUSSETS.

Contrasting colors were used in these samples merely to emphasize the stitch.



"OVERLOCK" SEAM FOR SHOULDERS.
"OVERLOCK" CONCEALED STITCH HEM FOR SKIRTS AND CUFFS.



"OVERLOCK" TAILOR-MADE SEAM FOR SHOULDERS AND GUSSETS.
"OVERLOCK" OVEREDGE FOR SKIRTS AND CUFFS.

The "Overlock" machine trims and seams (or hems or overedges) and covers the raw edges in one operation.

This method of joining cuffs and sleeves, and other parts, is claimed to be the strongest and most satisfactory yet devised.

The "Overlock" Machine Trims the raw edges and seams (or hems), or overedges, and covers in one operation.

Lacing a Belt.

We are indebted to I. B. Williams & Sons, Dover, N. H., for the following valuable article on lacing belts, which is contained in a booklet recently issued by them:—

A large proportion of complaints of belts breaking at the lace holes is directly due to improper lacing. It is

FIG. 1.

just as important that the ends of a belt be joined correctly as it is to have the shafting and pulleys in alignment. The lacing should have the same attention as is given any other details of mechanical equipment.

Of the numerous devices on the market for fastening belt ends, raw

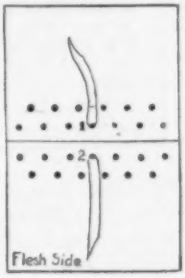


FIG. 2.

hide or tanned lace leather is without doubt the most suitable, as it approaches more nearly in material, texture and flexibility to the belt itself.

There are many methods of lacing a belt, but the one which we have selected is the simplest and most practical and is suitable for belts of any size. The strain is evenly distributed, each string bearing an equal share of the pull, the tension is all direct and in a straight line with the belt, which will prevent curling. It will be noticed that on the side next the pulley all the strings are parallel with the edges of the belt; the crossing of the lace strings being accomplished on the flesh side.

In preparing the ends of a belt for lacing use a square, so that the edges may be exactly at right angles with the sides and will therefore come together without throwing them out of line.

The first row of holes for belts up

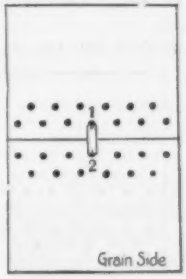
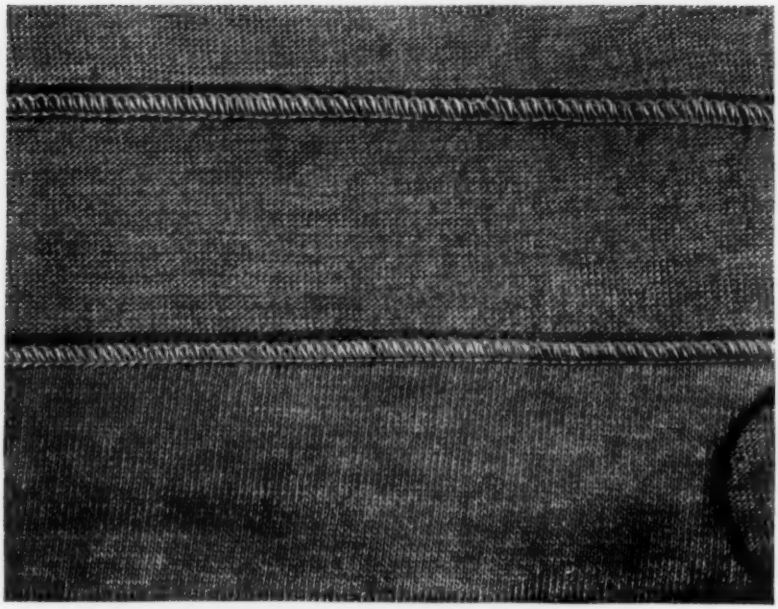


FIG. 3.

to and including 8 in. should be ¾ in. from end, the second row 1¾ in. from end. For belts over 8 in. these distances should be increased by about ⅜ in. Punch the outer holes in a 2 in. belt ⅜ in. from side, in a 2½ in. belt ½ in. from side, for belts 3 in. up to 8 in. ⅝ in. from side, above 8 in. ¾ in. from side.

The details given here (see figure 1), are for punching an 8 in. single or double belt. We have selected this size in order to conform with the diagrams given for lacing, which are also for an 8 in. belt. It will be noted there are 13 holes, 7 in the first line and 6 in the second.

Draw two lines across the belt, the first ¾ in. from the end, the second 1¾ in. from the end. The first holes A A are ⅝ in. from the side. In the intervening space locate the other 5 holes, making them equal distances



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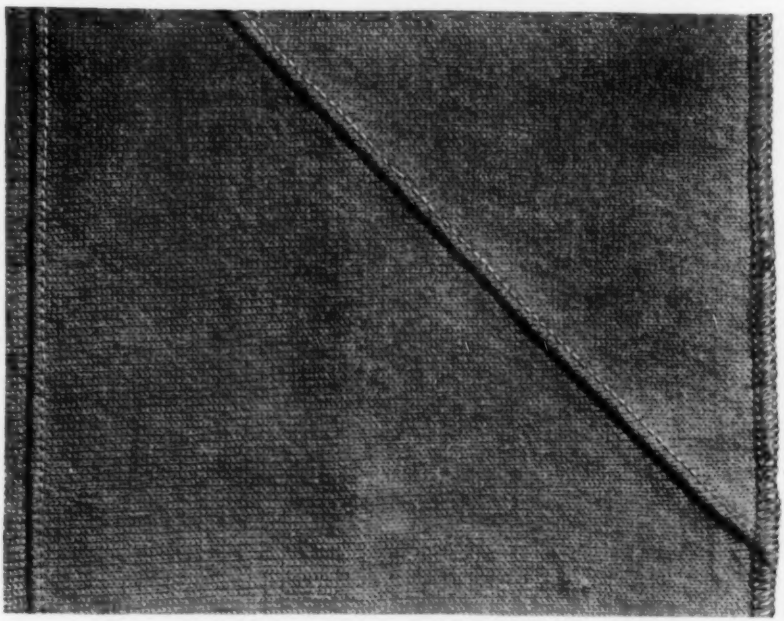

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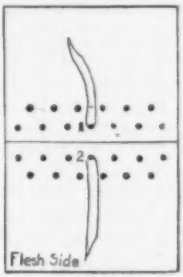

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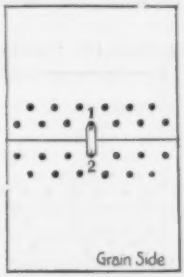

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Draw two lines across the belt, the first ¾ in. from the end, the second 1¾ in. from the end. The first holes A A are ⅝ in. from the side. In the intervening space locate the other 5 holes, making them equal distances

apart. In a 6 in. belt such as we have taken for example these holes will be about 1⅛ in. from centre to centre. The second row of holes it will be noted are just half-way be-

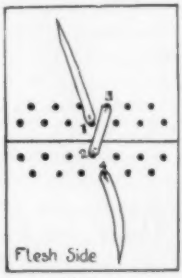


FIG. 4.

tween the holes in the first row. In preparing the other end of the belt be careful to have the holes precisely opposite.

Begin lacing by pushing the two

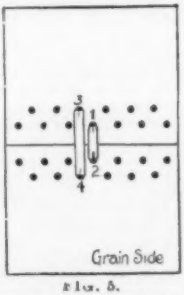


FIG. 5.

ends of the lace through holes No. 1 and 2 from the grain (pulley) side (see figure 2), drawing it snug. Figure 3 shows how the lacé will look on the grain side. Push the string from

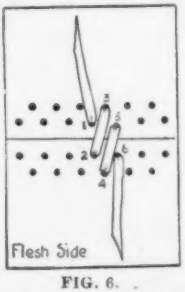


FIG. 6.

No. 2 hole down through hole No. 3 and up through No. 4. The lacing continues as follows: down through No. 5, up through No. 6, down through No. 7, up through No. 8, down through No. 9, up through No. 10, down through No. 11, up through No. 12, down through No. 13, up through No. 14, down through No. 13 a second time and up through No. 14 again, then down through No. 11, up through No.

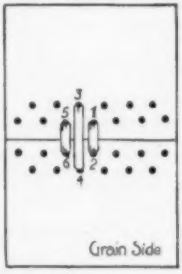


FIG. 7.

12, down through No. 9, up through No. 10, down through No. 7, up through No. 8, down through No. 5, up through No. 6, down through No. 3, up through No. 4, down through No. 1, up through No. 2. Now punch a slit half an inch back from hole No. 2 as shown on back of cover, push the lace down through, then make another slit one-half inch back of the first one, pull the lace up, draw tightly and cut

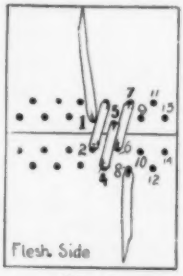


FIG. 8.

the lace off close. The other half of the belt is laced in the same manner ending and disposing of the loose end by tucking through slits on the opposite side from number one.

In lacing keep strings at equal tension so that the strain may be evenly distributed to each hole.

Figures 4 to 9 illustrate how the lace will appear on the flesh side and also on the grain side during the several stages of the lacing.

GENERAL.

Figure 10 shows the number of holes and their position in belts from 2 inches to 12 inches wide inclusive.

The wider the lace is the larger the holes must be punched, with a consequent weakening of the belt.

The following sizes will be found of

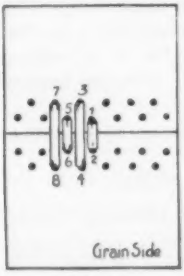


FIG. 9.

ample strength if our Cocheco Raw Hide, Oriole Tanned or Orange Lace is used.

Width of Belt. Single or Double.	Width of Lace.	Use Punch No.
up to 2½ in.	1-4 in.	
2½ to 5 in.	3-8 in.	8
6 to 14 in.	1-2 in.	10
over 14 in.	5-8 in.	12

Keep the lace carefully covered, for being of an oily nature it catches and holds dust and particles of metal giving it a dingy appearance and in time ruining it.

Lace with the grain (smooth side) out and do not allow the strings to become twisted.

It is best to place all the work of

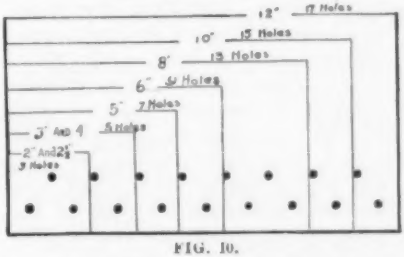


FIG. 10.

lacing the belts in the factory in the hands of one man, instructing him carefully in the work, the workman will become skilled in lacing, all the belts will be laced uniformly and there will be very little trouble from belts breaking at the lace joint.

A FEW HINTS AND RULES.

For several reasons the grain (hair) side of a belt should run next the pulley.

The belt and pulley adhere more closely when both are smooth and will transmit fully thirty per cent. more power when run grain side to the pulley.

The flesh side has more strength and elasticity and is not so liable to crack as the grain side will do when the belt is old, hence it is better to crimp the grain than to stretch it.

The motion of driving should run with, not against the laps.

Our belts are stamped with an arrow every ten feet, indicating the direction in which the belt should run.

The following rules will be found useful as they cover the principal problems that occur in the belting equipment of a factory.

Rule to Find the Horse-Power That Any Given Width of Double Belt is Easily Capable of Driving.—Multiply the number of square inches covered by the belt on the driven pulley by one-half the speed in feet per minute through which the belt moves, and divide the product by 33,000, the quotient will be the horse-power.

Rule to Find the Proper Width of Belt for any Given Horse-Power.—Multiply 33,000 by the horse-power required, and divide the product first by the length in inches covered by the belt on the driven pulley, and again by half the speed of the belt.

A simple rule to find transmitting power of belting without first computing the speed in feet per minute that it traverses, is as follows:

Multiply the diameter of the driving pulley in inches by its number of revolutions per minute and this product by the width of the belt in inches. Divide this product by 3300 for single belting or by 2100 for double belting, and the quotient will be the horse-power that can be safely transmitted.

To Find the Length of a Belt.—To twice the distance between centres

add one-half of the combined circumference of the two pulleys.

For example we take two pulleys, one 16 feet, the other 3 ft. 6 in. in diameter, with 35 feet as the distance between centres.

Twice the distance between centres 70 ft	
Circum. of 16 ft pulley 50 ft. 3 in.	
" " 3 ft. 6 in. " 11 ft.	
Combined circums.	61 ft. 3 in.
One-half of this amount	30 ft. 6½ in.
Total length of belt	100 ft. 6½ in.

Rule for Piecing Out Belts. — In order to calculate the changed length of a belt when a different size pulley is put on in place of one removed, take out of the belt or put in 1½ times the difference of the

THE BABCOCK STRIPER.

pulleys. Thus: If you take off a 24 in. pulley and put on a 30 in. one, you will want to add $30 - 24 \times 1\frac{1}{2} = 9$ inches of new belt.

To find the number of revolutions of the driven pulley when diameter of driver and driven are given (the dimensions used in the following example are the same as those in a preceding one, assuming the larger pulley to be the driver and its speed one hundred revolutions.)

Multiply the diameter of the driver 16 ft. by the number of its revolutions 100	
Divide this result by the diameter of the driven	3½ ft) 1600
Number of revolutions	457⅐

The diameter and revolutions of the driver being given to find the diameter of driven pulley necessary to make any required number of revolutions.

Multiply the diameter of the driver by its revolutions	16 ft. 100
Divide by revolutions of driven 457⅐	) 1600 3½ ft

To find the size of the driver:

Multiply the diameter of the driven by the number of revolutions	3½ ft, 457⅐
Divide by the revolutions of the driver	100) 1600
The result is the diameter of the driver	16 ft.

Babcock Striper for Knitting Machines.

The accompanying illustration shows a striper that can be used on any knitting machine in which the cylinder revolves.

It was invented in 1898 by George E. Babcock, Fort Plain, N. Y., and after passing through the usual evolutionary period, finally assumed its present form as shown in the engraving.

Its merits are proved by the fact that firms who purchased the striper four years ago have given large duplicate orders during the past year, notably the Rockton Mills, Little Falls, N. Y., where sixty of these stripers are now in operation. They are used in the manufacture of sweaters, toques, tams, mufflers, and, in fact, any kind of knit goods in which it is desirable to change the color of the yarn, or change from one kind of yarn to another of the same color.

The operation of the striper is as follows: The yarn is fed through suitable guides to two arms having guides at their outer ends, and arranged to vibrate at an angle of 45 degrees to the vertical line of the needles in front of a thread guide of peculiar construc-

tion. These arms are vibrated alternately by means of a cam wheel, which is brought into action by a pattern chain, and are so set that when one throws the yarn in, the other throws it out of the needles and into a cutter, where it is cut, and the loose ends held by a spring until the yarn is again lowered into the needles, when the end is released from the spring as the other yarn is brought up to the cutter.

This machine is built by the Babcock Machine Works, Fort Plain, N. Y., where further information can be secured.

The Trials of a Young Superintendent.

BY BEN SHAW.

I.

In telling my story of the troubles and afflictions which beset my pathway as a young superintendent in a carding and spinning mill, I have no intention of conveying the impression that these are the only difficulties lying in wait for the inexperienced overseer or superintendent. Neither would I presume to say that they are new troubles, or that I have any copyright on them, for, as the old saying is, "Nothing is new under the sun," and these same vexing problems have been bothering men's heads, I venture to say, to a greater or less extent, ever since the birth of the machines in which they originate, and will probably continue to take on new forms of "cussedness" until the end of time.

It is my endeavor, however, to show up a few of the troubles and errors with which I have come in contact in mill life, in the hope that "the other fellow" may profit somewhat by my experience.

It was my first experience as a "super." I had been brought up in a large mill in a large manufacturing city, had worked in various rooms, and had done some drafting. Before engaging with this mill I was told that something was wrong in the carding and spinning rooms. As it was only a yarn mill, my figuring up of the situation was that everything was wrong.

My first day "on deck" showed me that my estimate was correct. The expense was way up and the production way down. The roving was uneven and drew in bunches when it drew at all. The yarn was uneven, weak and cockled. That was all I found out the first day.

As soon as it was noised abroad that I had arrived on the premises, I received a visit from the boss carder, who organized himself into a committee of one to make me feel at home. He informed me that his name was Dan Walker. "My friends call me 'Dan'," he said. And as I wanted to be friendly with him as long as I stayed, or as long as he did, I made a mental resolve to call him "Dan," too.

He gave me his entire history during that first visit, and it certainly was lacking in dramatic interest. Imagine my surprise, however, when he told me that he had never visited any other mill except once in his life, and that was several years ago when he drove up into the country to a small mill where his wife's father's cousin's son-in-law was an overseer.

"This mill," he said, "was fitted out with the old-fashioned Taunton speeders, but there warn't nothing there but I'd seen long ago, so I jest told my wife when she wanted me to go again that we had got jest as good a mill right here and I was goin' to stay to home and mind my own business, and I guessed it would be all I could tend to."

Think of that! A mill man in the twentieth century taking his standard from the old Taunton speeder.

For the benefit of those not familiar with this ancient machine, Fig. 1 will serve to illustrate. A is the bobbin, lying on revolving rolls, R R. B B is an endless canvas or leather belt which keeps up a shuffling movement on either side of the sliver, giving it the appearance of twist, and possibly

putting some little strength into the strand. The winding onto the bobbin is controlled by presser finger, P, attached to traverse rod, T. The style of bobbin used is shown at C, being a plain barrel with a cast iron pin driven in at either end. One machine would hold sixteen of these bobbins.

And Dan thought himself ahead of the game because he knew of a man who once used this style of frame. You may be sure that, as soon as I could spare him for a few days, I arranged to have him go sight-seeing.

The next morning I went into the mill, stripped ready for work. I found

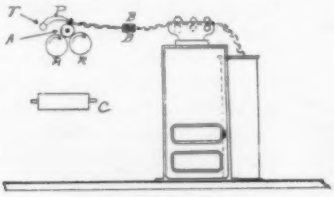


Fig 1

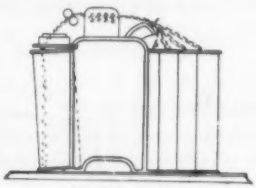


Fig 2

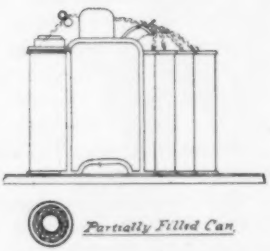


Fig 3

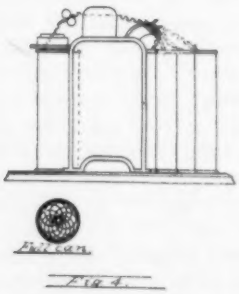


Fig 4.

the sliver at the railway heads delivering into the cans, or at least coming out of the cans in the most haphazard fashion. The cans in use at the front were large. I saw this in a moment.

"Don't you think they are too large, Dan?"

It didn't strike Dan that they were.

"But can't you see that after the sliver leaves the coiler, and before it reaches the bottom of the can, it loses all of its coil, and then, piling up in the centre of the bottom, after a time falls over?"

Dan rather guessed that was the trouble and that was just what raised thunder with that soft sliver.

Of course the easiest way out of this trouble was to get spring bottom cans. But as the question of expense was a very live one just at that time, the idea was put aside.

After considerable tipping and juggling of the can we finally decided that the turn-table might be canted enough to bring the drop of the sliver nearer the edge of the bottom of the can. When this idea was carried out and the tables tipped, there was no further trouble.

Figure 2 shows the position after the change was made. It will be seen that the tipping of the can would cause the sliver to distribute itself pretty thoroughly over the bottom of the can, without any mussing up, allowing it to be drawn out freely at the next frame, saving the time and patience of the tender, as well as a large amount of drawing waste for the pickers to work over.

In several cases I found that the centre of the coiler was set too near the centre of the can, and, instead of a heavily filled can as would result at Fig. 4, there would be a large hole in

the centre of the coil and "room to burn" around the edge, as in Fig. 3.

The tender would crowd the sliver down, the pile would "buckle," and a tangled mass would be the result. This required more changing of cans, and the tender, to use his own words, "had to keep humping, to keep up with the band-wagon," while some of his other duties must suffer in consequence. With the turn-table centre moved farther off from the coiler centre, the trouble disappeared.

After a few days Dan and I were good friends. I liked him. He was blunt and had a homely way of coming out with the facts. But he was honest and willing to be put on the right track. And I have found that there is more manhood in that class of overseers than in any other.

He came after me one day during my second week and said:

"I just want you to come in here and look at my drawing this morning."

I inquired as to what was on his mind.

"Wait until you see," was his reply.

"Do you see that sliver?" he asked, as we reached the frame. "See it stand out like a boy's hair in the dark."

"It's the electricity in the cotton, isn't it?" I suggested.

"Yes," he replied, "but I can't call it out just because I've found out what it is."

"What have you tried to do for it?" I inquired.

"I've changed the draft and the speed and everything else I knew, and forty things I didn't know."

"Have you tried moistening the air?"

"You bet I have wet down this room until we had to wear rubber boots to get around. The only thing I haven't done is to put a man on with a line of hose to wet it down."

"Have you any extra rolls?"

"Got some out in the paint shop that ought to be done by this time."

I suggested his getting them and trying a change.

"Billy," addressing himself to a man near at hand, "go out in the paint shop and tell Jimmie I want those rolls."

On close examination I found that the fibres lapped. The rolls were painted with a vermilion. I found upon inquiry that this was a time-honored custom, that it was supposed to be an absolute necessity.

"But, Dan," I said, "why won't any paint do just as well? You know vermilion costs money."

"Maybe it would," he answered, "but I never wanted to run no risks."

Just then Billy returned, but without the rolls.

"He says," he blurted out, "that he hain't got 'um done. He's just got a coat of red paint on 'um, but you can have 'um if you want 'um."

"Bring them up, Billy," I said.

"We may as well try the experiment now as any time." This last remark was addressed to Dan.

"All right," he says, "it's your funeral."

In the course of time Billy reappeared with the rolls covered with a very inexpensive red paint. They were placed in position and the frame started up. The electricity was gone!

After they had been running a week Dan came out to free his mind. "Of course," he said, "I'm blamed glad them rolls is all right, and it will save money, but I hain't had nothin' hit me so hard since my ole man whaled me for goin' swimmin' in the frog-pond."

I have since found out that the electricity was due to the great amount of mercury in the vermilion.

"Dan," I said one day, "I want you to look at this oily roving. Where does it come from?"

Dan took the bobbin which I handed him and unwound several coils. The stain appeared at regular intervals, not continuously. Between the stained portions the roving was all right.

Dan said nothing and walked away, but I knew that his silence meant trouble for somebody. I had learned to read him, and had found that all he needed was to be told that something was wrong. Like many others, he had been allowed to get into a rut, but he wanted to get out when he awoke to the fact.

It was not many hours before he returned.

"I've got it," he said. "You come with me."

I followed him and soon learned the cause of the oil stains. These fly frames were fitted out with fluted rolls. The rolls were, of course, oiled at the bearings, and, as this had been carelessly done, a considerable amount of oil had crept along the roll and worked into the flutes to some extent. As the traverse rod carried the roving over to this point, the oil was absorbed until the roving was carried back away from this point. With each return of the traverse the roving must suffer until the oil is all taken up.

"But," Dan said, in finishing his explanation, "I don't think it will happen again right away. I guess that oiler hasn't 'come to' yet."

Just what particular form of lightning struck this oiler I never knew, but it was certainly effectual for the time I remained at that mill.

(To be continued.)

The Buffalo Improved Ventilator.

During their quarter of a century of experience in the heating and ventilating of buildings of all classes, the Buffalo Forge Company, of Buffalo, N. Y., has become thoroughly in touch with the conditions which make stationary ventilators an efficient and serviceable help. Their value when in use with the fan system, is too often under-estimated. In certain cases they are alone amply sufficient for proper ventilation.

While requirements of a stationary ventilator are hard to fulfil, they have been met by the new Buffalo improved ventilator which the above-named company has recently placed upon the market. These ventilators provide a free exit for the impure air in the building, but effectually retard and prevent the air from re-entering the building through the ventilator.

With the movement of air across the head of the ventilator there is a suction produced which actually draws the air from the room. This sucking motion is obtained because of the shape and construction of the ventilator head.

These ventilators are built of heavy galvanized iron and will resist any strain of reasonable magnitude that may come upon them. They are silent in their work and do not require the expenditure of available power

which in some instances means a considerable outlay of money each week.

Many buildings need both light and ventilation. Where such conditions are met the ventilator is specially constructed with a glass top head. It loses none of its good qualities as a ventilator but has the additional quality of supplying light. These special ventilators may be constructed either of copper, brass or steel plate, or they may be made of the regular material and lined with pure lead to protect the ventilator when used to exhaust obnoxious gases or other injurious fumes.

They are also used to prevent down drafts and smoky chimneys. The usual method of applying them to a chimney is with the outside flange, which forms a splendid protection for the top of the chimney, and it is a rigid and desirable method of fastening.

(Continued.)

Finishing Wool and Mixed Fabrics.

XIV.

BY N. REISER.

Translated from the German for the Textile World.

Continued from June.

(Copyrighted 1901 by Guild and Lord.)

GIG STREAKS.

Gig streaks arise from various causes, among which may be mentioned: 1, teasels of irregular sizes or stiffness; 2, teasels set unevenly in the slats; 3, guide rolls out of line with the cylinder; 4, excessive tension on the pieces; 5, irregular moistening of the goods; 6, wrinkles forming in the cloth as it passes over the cylinder; 7, tight or loose selvages.

To remove gig streaks, the goods, while wet, should be wound tightly on rolls, and after a time unwound and regigged; this often removes faint gig streaks.

Insufficient gigging is detected by the muddy appearance of the pattern of the goods or "bottom" of the fabric. It may be due to insufficient gigging or an excessive amount of felt in the goods. The defect becomes very plain when the goods have received a few runs on the shear, but is easily discovered in the gigging by a skilled gigger.

If it is necessary to regig the goods after having been sheared, the pieces should be wet out with warm water. The gigging is then begun with dull work, which is gradually sharpened to the end of the process; it is difficult to remedy insufficient gigging after the goods are sheared, although wetting out in warm water and regigging may improve the finish. During the gigging, the water is often applied to the pieces with a brush or small broom. A roll with a spiral brush as shown at Fig. 46, is sometimes used for the same purpose. This dips in the water, which is thrown on the pieces in the form of a fine spray.

Too much gigging is a more serious defect than too little gigging, since there is no remedy for it. It makes the cloth light, soft and tender, and may be due indirectly to defects in handling, twist in the yarn, weaving, or excessive fulling.

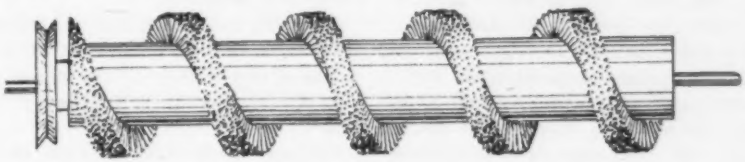


FIG. 46.

EXCESSIVE GIGGING.

If the raw material is too short or has been injured in washing, carbonizing, coloring, drying or carding, the fabric will not stand gigging as well; short fibres are easily separated from the fabric; if tender, they are easily

broken in gigging; in either case, the goods are made sleazy or tender.

Either too soft or too hard twisted yarn may result in the cloth becoming tender by gigging.

We will assume that we have a black broadcloth or a similar fabric requiring a hard gigging to produce the desired finish, and in which the yarn has been twisted too soft. If the goods are gigged sufficiently to secure the proper nap and finish, the fabric will be hopelessly ruined, as the soft twisted threads cannot stand this gigging.

Again, taking the case of an overcoating fabric made with a weave in which the filling floats on the face more than does the warp. If the warp yarn is made from too short material or contains too little twist, the gigging required for finishing the goods often weakens the warp yarn at the point where it binds the filling so that the latter is loosened and becomes torn by the teasels, and the goods seriously injured. On the other hand, if cloth requiring a fine, thick nap is made with a yarn that has been twisted too hard, the fibres that have been first loosened are apt to be torn from the fabric, resulting in a thin nap.

If a hard gigging is essential for the desired finish, the cloth should be made with a tight weave. It will be readily seen that, if the threads float for a long distance, the fibres can be pulled from the fabric more easily than when the fibres are held firmly by frequent intersections of the threads. To prevent excessive waste in gigging, either the weave must be closer, or longer material used.

Excessive gigging may result from the goods being felted too much. Take, for an example, a close finished cassimere made in imitation of worsted. If such a cloth is fulled too much, a correspondingly harder gigging is required to loosen the felt and clear the face, and thus the fabric is liable to become tender. If the face is not well cleared on the gig, it cannot be sheared to imitate a worsted.

For a third example, we will take an overcoating fabric that has been fulled too much. The finisher will find it impossible to soften the cloth by gigging without making an excessive amount of waste.

Waste in gigging is caused by the goods being too dry; by the use of too sharp work, especially at the beginning; or by continuing the gigging process for too long a time.

If a piece has been gigged too much, but not yet been sheared, it can sometimes be saved by careful fulling and subsequent finishing as a melton. This method, however, is only a makeshift adopted to avoid an unmerchantable and tender piece of goods.

If the teasels are wet when taken from the gigs, they should be dried before being cleaned. In some cases they come from the gigs dry enough to be brushed at once. Teasels are cleaned by holding the slats containing them across a revolving brush; this brush is enclosed in a frame, only a small portion being exposed, to which the slats are applied.

POLISHING GOODS.

This is a process used in place of gigging for some kinds of finish. It does not produce a thick nap, but serves to soften and smooth the goods. A polishing machine has emery covered rolls which bear on the face of the cloth. Ground emery may be applied directly to the surface of the rolls, or emery paper used instead. The rolls are either solid or have slats covered with emery.

Polishing goods with these machines must be done with great care, as the action of the emery on the fibres is very severe and the cloth is easily injured.

In many mills emery rolls are used to soften the back of the cloth, and in recent years have been extensively employed on ladies' fine goods and worsted cloths to impart a soft handle, similar to that of face finished goods. In a polishing machine recently built in Germany, an air cushion is between the emery and the

cloth, in order to prevent injury to the fabric.

WINDING WET CLOTH ON ROLLS.

This process is very important for removing washing and fulling wrinkles. The cloth in a wet state is wound on rolls about 4 inches in diameter, and left from six to twenty-fours hours, and in some cases for several days. While being wound, the cloth should be kept under suitable tension, both width and lengthwise, that no wrinkles may be in the goods when wound on the rolls.

The rolls are then placed in a perpendicular or horizontal position; in either case they must be frequently reversed that the water may not settle into one part of them. This change in position may be effected by placing the rolls in a frame, as shown at Fig. 47. One end of the roll is supported in a bearing, b. At the other end the gudgeon is inserted in a short, hollow shaft, to which it is fastened by a set screw. These hollow shafts are connected at the end of this shaft, which rests in the bearing, is fastened a pulley, d. These pulleys are connected by a chain and the rolls thus revolved by power.

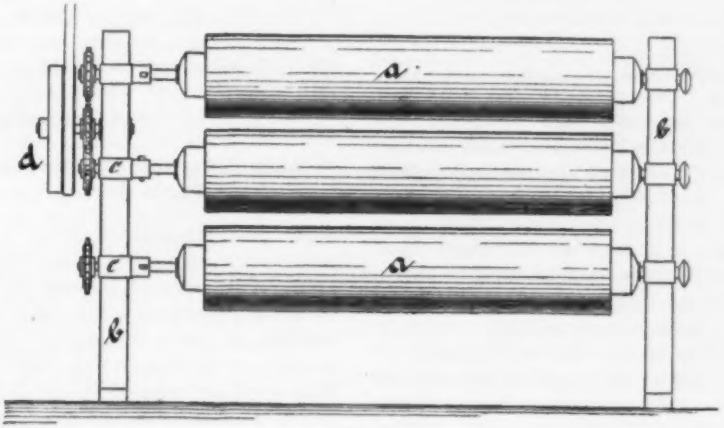


FIG 47.

The goods are extracted and dried directly after gigging, in case they are not to be piece dyed. Medium and low goods are extracted in the centrifugal machine or by running through squeeze rolls. For the better qualities of fine face goods a roll extractor is used.

DRYING IN THE OPEN AIR.

In early times, when textile manufacturing was carried on by many different individuals, a single establishment contained but a few looms; each proprietor finished his own goods and dried them in the open air. By this method it is necessary to wait for good weather, and improve the time, no matter how short, when the sun happens to be shining. Drying in the open air has both its advantages and disadvantages. White goods, such as flannels, are bleached by the sun rays, while fugitive colors are injured.

Drying in the open air white goods, which are to be colored afterwards, may cause streaks in the goods, by reason of the sun shining unequally upon different parts of the pieces, causing a difference in shade by reason of the bleaching action. This difference is very apt to arise when the goods are hung in the air in folds, instead of being stretched out in length and width.

Tenter bars are used for open air drying. They consist of a frame supported on posts from 5 to 7 feet apart

and set firmly in the ground. These posts are fastened together at the top by strong string pieces in which hooks are set, for holding the cloth. At the bottom of the posts and near the ground are fixed string pieces in which hooks are also set. One end of the goods is fastened to this frame, while the other end is fastened to a short bar by means of tenter hooks. A rope is fastened to the bar for the purpose of stretching the pieces lengthways, as required.

After stretching the pieces lengthways, the selvage is first hooked on the upper bar, then on the lower one, after which the latter is pressed down until the cloth is stretched to the required width.

In order to have the head and handle heavier than the rest of the piece, a few yards at this end is sometimes hooked at both top and bottom of the frame before stretching the whole piece lengthways. This, however, is a trick of the trade which should not be countenanced.

In my childhood days, I remember a manufacturer who used to hitch a jackass to the ends of the pieces on the tenter bars, and thus made the animal earn his oats by increasing the length of the cloth. At the present time, manufacturers do not make a practice of stretching their goods lengthways, as the subsequent steaming and sponging shrink the goods to the original length.

(To be continued.)

German Technical Schools.

Rochester, N. Y.

Editor Textile World:

Referring to the methods in technical education here and abroad, which were touched upon in my letter published last month, I wish to add that the system adopted in German schools is entirely different from that used in the schools of this country.

The main difference consists in the fact that in Germany the schools are more or less controlled by governmental authorities, and are subject to the spirit of system and orderly precision, which is a main feature of all the government schools in Germany. In this country, on the contrary, the schools are mainly the result of private initiative.

As in every other human enterprise, the benefits are not confined to one system. The German methods insure a better graded system, more logical, consecutive development; the American private institutions reach out in every direction; the one has thoroughness, the other experimental enterprise.

I am convinced that we need to supplement our system with the painstaking thoroughness prevailing in foreign countries.

MAX LOWENTHAL.

Locke Safety Shut-Off Valve and Engine Stop.

The great importance of an automatic engine stop needs no demonstration. The practical solution of the problems connected with the construction of such a device carries with it many difficulties which, however, have been surmounted by the invention of the Locke safety shut-off valve and engine stop.

The combination of these two very important safety devices has demonstrated its merit beyond any question. In the first place it provides an automatic shut-off valve in the line of steam pipe, which is always ready to close automatically when there is a break in the pipe or engine that would allow an escape of steam.

The great importance of this valve as a life and money saving device is shown by the fact that a 12 in. valve in use at the Fall River Manufactory by its timely action saved the lives of their superintendent and engineer, and prevented the destruction of a large amount of property.

After this accident had occurred it was discovered that a very simple and effective engine stop could be made

by opening a small valve at the top of the steam cylinder. The dropping of the weights by pressing a button in any part of the plant opens the escape valve which causes the shut-off valve to close at once, thus stopping the engine.

Should the speed of the engine reach the danger point, a speed limit produces the same effect as the pressing of a button.

This engine stop acts independently of any connection with governor or engine. The working parts are incased in a neat case and may be placed on the wall of the engine room.

By a simple change in the arrangement, the engine-stop will work without the shut-off valve, but the shut-off valve being the more important of the two should be used whenever possible.

Following are a few of the claims made for these useful devices: Certainty of action; simplicity of construction; quickness and ease of operation; non-liability to get out of order; protection of employees; control of engine from distant points; reduction of damage resulting from bursting of steam pipes and engine cylinder.

The following is one of many similar letters received from users of these devices:

Fall River, Mass., Nov. 24, 1899.

Messrs. Locke Regulator Co., Salem, Mass.

Gentlemen:—We have used your method of stopping our engine for a number of weeks, and it has worked to our entire satisfaction. We consider it the best device of any that has been brought to our attention, and have ordered the application of the same in the engine room of our No. 1 works. We can stop the machinery in the works where we now have it applied within fifteen seconds of the time of pushing the button, and do not believe the same rapidity of operation can be shown by any other method.

The mill inspectors of the state police who have seen its operation in our works are greatly pleased with it, and I believe will give you an excellent recommendation, should you ask for one from them.

Yours very truly,

Fall River Bleachery,

Spencer Borden, Treas.

Further information concerning this safety apparatus can be obtained from the Locke Regulator Co., Salem, Mass.

Thread Boards and Guides for Wet Twisting.

Lewis T. Houghton, Worcester, Mass.

Read Before the Meeting of the New England Cotton Manufacturers' Association.

The Board of Government has considered a paper on Thread Boards and Guides, read at the last September meeting of the Association, to be of such interest as to request a resume and extension of that paper.

That this subject of thread boards and guides has received but little attention in the past is shown by the fact that the thread boards and guides now in general use are practically the same as those used 50 years ago.

There are many causes for broken ends, and many of them may be easily remedied; such as badly worn rings or spindles, or their imperfect adjustment; grooved or badly set thread guides. Probably some fault of the thread guide is the cause for a large portion of the broken ends that occur today, as the rings and spindles, as they are now made, are very near perfection, while the same old thread board and guides, with all their imperfections, are still used.

I think it will be generally conceded that the nearer round the rings are, the less breaking of yarn and travelers, and without any attempt for relief, millions of spindles are running today under conditions that cause broken ends just as quickly as a ring would that was badly out of round. Such a ring would be thrown away very quickly.

The practical cotton spinner, to obtain the best results, would require the best spindles and rings obtainable, and have the thread guide deliver the thread exactly over the centre of the spindle. Of all the spindles in the world that are now running, the per cent. that have the thread delivered exactly over the centre of the spindle is very small, simply because it is practically impossible to adjust the thread guides in general use exactly, as one turn of the guide out or in, one-sixteenth of an inch, is the limit to their adjustment. One-sixteenth of an inch either way from centre makes one-eighth of an inch difference from the opposite sides of the ring, and this variation of guide from the centre, has just the same action on the thread and traveler as a ring would that was so much out of round.

A ring one-sixteenth of an inch oblong would be very quickly discarded, while the thread guides are used right along, without complaint, simply because they are adjusted as well as they can be.

The benefit of perfect adjustment can be easily demonstrated by trying to spin with poor roving or fine numbers of yarn on the average spinning frame. Probably one could spin with a three square ring and a guide that delivered the thread anywhere, provided the yarn and traveler were strong enough.

Many times the traveler, ring, spindle, or poor roving are blamed for the fault of a badly adjusted thread guide. An instance lately came to my notice. A mill had some roving that broke so badly they could not use it. For an experiment, four spools of this roving were tried on some thread guides that were adjusted exactly, with the result that two doffings were spun from this poor roving with only one broken end.

That form of guide which has an end extended to form a thread arrester, is the cause for many broken ends, unless it is held in right position. For if this arrester is not in right position, it either fails to arrest the end when a thread does break, and lets the end whip around and break down the adjoining thread, or it catches and breaks a thread that is running all right. I have seen many spindles in succession put out of business for this reason. The thread arresters were out of their proper position, and I was told by the overseer that it was a common occurrence.

Many mills do not use this form of guide because it is so liable to become displaced, and the consequent occurring loss. Some mills employ a man whose whole time is spent in looking after the adjustment of thread guides, and many of the mills I have seen would keep a man pretty busy.

I was in a spinning room not long ago where the Pontiac guide was used. The arrester ends were standing at all angles, and yet the overseer was anxious to bet fifty dollars that there was not a guide in his room that was not perfectly adjusted. He thought so, and there was no use in pointing out to him that there was but one position in which the arrester served its purpose the best.

I have here a section of thread board, recently taken from a mill, and there are thousands more running there today just like it (or worse, as the superintendent said), and there are many other mills with thread boards in practically the same condition as this sample; and the stockholders wonder why the earnings are not larger. An examination of this sample would furnish them with an idea.

The grooving of guides is another cause for broken ends, and is undoubtedly the reason for the so-called vibrating guide, in regard to which there is such a wide difference of opinion among expert cotton spinners. The only point on which they agree is, that the vibrating thread prolongs the wear of the guide. Its advocates also claim that this vibration permits the twist to run up to the bite of the roll better. This last claim is denied, for

while the vibration one way is with the twist, the opposite vibration is against the twist, and the gain one way is offset by the opposite vibration.

The advocates of the vibrating guide do not seem to have a very clear case on this point. Those opposed to this guide claim that the gain made by the longer wear of the guide is lost many times over by the greater breakage of travelers and the extra and uneven wear of the rings, caused by this vibration.

If this last claim is correct, here is a clear case of saving at the spigot, and the claim seems to be warranted, for if a ring that is oblong will cause more breaking of travelers, and wear more uneven than a round one would (and I think this is generally conceded), then the vibrating thread guide is justly condemned, for it causes the same uneven, jerky motion upon the thread and traveler that an oblong ring would, especially so when the ring is at the top of the traverse.

Would it not be of considerable interest to have this question settled by an exhaustive test in some of the textile schools, where preconceived opinions would not prejudice the result of the trial? I have talked and corresponded with expert cotton spinners on this matter and feel convinced that the vibrating thread guide should not be used if the best results are desired.

I have taken more time, perhaps, than was necessary in referring to some of the well-known causes for broken ends, in order to clearly show some of the indispensable requirements for a satisfactory thread board and guide.

1st. Thread boards should allow easy and accurate adjustment of the guide, for if this adjustment is not easily done, "pretty near" will have to answer.

2d. Permanence of adjustment. When the guide is once accurately adjusted, it should require no more thought or care of the overseer, who has enough to think of without watching the thread guides.

3d. The thread board should also be so constructed as to allow easy renewal of guide when worn, and hold the new guide as solid as a new board would.

4th. I would have durability. A thread board should be so strongly made, of such material, as to last as long as the frame, without any repairs.

5th. The guide should be of some hard material to prevent grooving.

6th. Cleanliness. The thread boards should be made of some material that is easily cleaned and cared for.

There can be no question as to the desirability of the requirements; the only question there can be is in regard to a thread board that fills them. I have here some samples of a thread board which were designed to meet these requirements, and the general approval with which they have been received warrants the claim that they do.

In wet twisting, the conditions are quite different from spinning, yet the requirements of a thread board for twisting are the same as for spinning, with the added complications caused by the action of water, which they have to meet. Nickeled brass seems to be the most suitable material for the thread board, as wood or steel are quickly injured by the action of water, and plain brass soon becomes sticky and hard to clean.

While the thread guides may be, and are, made from brass wire, it wears out so quickly that it is not very desirable for this purpose. Steel rusts so easily, and enamel wears off so quickly, that porcelain seems to be the most desirable material for a thread guide in wet twisting.

One serious objection to the porcelain guides now in use has been, no adjustability, and this one thing, lack of adjustment, is probably the cause for 50 per cent. of the breakage in wet twisting. I have seen a twisting frame with over 75 per cent. of the

spindles out of business, and the thread winding up on the rolls. This frame was fitted with porcelain guides that were badly worn, and the thread was delivered considerably off from the centre of spindle, which was, evidently, the cause for so much breakage of thread.

Textiles in the Lead.

The wages paid affords for two reasons the best means of estimating the importance of an industry. In the first place it shows how much the industry contributed to the support of the people, to supply the necessaries and comforts of life to the individual. In the second place there is less chance of a duplication of figures which renders the value of the product so uncertain. For instance, the value of yarn produced is reported as the product of the spinning mill, and when woven and finished is again reported as the product of the weaving mill.

With wages such duplication is not possible. A day's work is bought and sold but once, and so we take the number of operatives and the wages earned by them as our standards for comparison.

According to the figures given out by the census bureau at Washington, two and one-third billions of dollars were paid as wages during the year 1900 to 5,321,087 workers in the various manufacturing industries of the United States, the average for each employee being $437. Of this vast sum, $209,073,162, or about 9 per cent., was paid in the textile industries. This is a larger share than that of any other branch, iron and steel coming next with 5¼ per cent.

The average wages of each worker in textile manufacturing in 1900 amounted to $316, as compared with $326 in 1890.

Of the various branches of textile manufacturing, the cotton industry employed the largest number of hands, 302,861; woolens came next with 245,141.

With the exception of jute manufacturing, which showed an increase in the number of employees of 277 per cent. in the ten years, but which is a very small part of the textile industry, cotton manufacturing showed the largest increase, 38 per cent., silk coming next with an increase of 32½ per cent., and woolens next with 13½ per cent.

Cost of Making Worsted Coatings in Yorkshire.

BY S. B. H

American manufacturers quite naturally manifest interest in the cost of woolen and worsted fabrics in Yorkshire, and to know how it is done, is only a reasonable enquiry. Let me today introduce them to a few particulars in connection with the production of worsted coatings, or at least a few fabrics which come under that category.

The fabrics we have under discussion today are not those which sometimes are spoken of as the "cheap and nasty" order, but are the genuine, "all wool" commodity. The first fabric that we look at is a black corkscrew worsted, which can be woven in either nine, eleven, thirteen, or as many heads or shafts as may be possible or desirable, according to the class of fabrics desired. The following is the actual cost of a piece, finished 55 inches, 21 to 22 ounces.

Face Warp	2-48 wors. 30 lbs. at 53,	$ 15.90
Back Warp	2-36 wors. 17 lbs. at 50,	8.50
Weft	1-24 wo s. 28 lbs. at 48,	13.44
	Total cost of yarns,	$37.84
	Weaving,	6 04
	Mending,	1.10
	Dyeing and Finishing,	5.60
		$50.58
	10% for sale expenses, etc.	5.06
	Total cost of making,	$55.64
52½ yards at $1.10 per yard,		$57.75
Cost of making,		55.64
	Profit,	$2.11

This is equal to a profit of 3 8/10 per cent. of the cost, and shows how near the nail head things are done among West Riding manufacturers. Smart, nice weight, attractive, this cloth sells

readily among good medium clothiers and tailors, producing garments which are indeed attractive to the average city man. For best Sunday wear this cloth we know is largely used, and London wholesale clothiers use it for their bespoke trade.

We now come to notice a better corkscrew black worsted, and one which sells for the very best trade here in England. It is a trifle heavier in weight, some in this cold England of ours finding it none too heavy for summer wear. This cloth weighs 23 to 24 ounces, and, consequently, is well suited for those who value cloth when purchasing garments according to their weight. The actual cost is as follows:

Face Warp 2-48 wors. 34 lbs. at 56,		$19.04
Back Warp 2-40 wors. 13 lbs. at 51,		9.69
Weft 1-30 wors. 26 lbs. at 52,		13.52
Total cost of yarns,		$42.25
Weaving,		7.06
Mending,		1.22
Dyeing and Finishing,		5.84
		$56.37
10% for sale expenses, etc.,		5 63
Total cost of making,		$62 00
51 yards at $1.26 per yard,	$64.26	
Cost of making,	62.00	
Profit,	$2.26	

Corkscrews are hardly so popular a cloth as they used to be, but even today they are selling in fair quantities and cannot by any means be left out of any manufacturer's stock, who is noted for the production of a good class of worsted coatings. The rib of the cloth has some advantages over the old four-end twill, and for those wanting to show a good bold surface twill and yet to appear smart and dressy, the corkscrew twill is certainly the thing.

We next come to notice the cost of a dress worsted coating, a style of coating that will never be "old fashioned." For "church" purposes no West End gentleman would feel himself complete if he had to go to St. Paul's in anything less than a dress worsted frock coat, and today there are as many sold as ever.

When properly made there are many advantages to recommend the fabric to the man on the street, and when the Wilson tariff was in operation, some fair big quantities of dress worsteds found their way into the markets of the United States. In fact, today, the largest weight of worsted coatings shipped from the Bradford consular district consists of the best classes of dress worsteds, prices ranging us to as high as $1.20. These, we expect, will meet the very best bespoke trade that is done in America.

The following is the actual cost of a cloth that has had an excellent sale in this country:

Warp 2-48 wors. 43 lbs. at 53c.		$22.79
Weft 1-30 wors. 29 lbs. at 47,		13.63
Total co t of yarns,		$36 42
Weaving,		7.54
Mending		1.22
Dyeing and Finishing,		5.84
		$51.02
10% for sale expenses, etc.,		5.10
Total cost of making,		$56.12
52½ yards at $1.14 per yard,	$59.85	
Cost of making	56.12	
Profit,	$3.73	

We now come to look at the actual cost of a very good line of black or indigo blue serge, our reckoning below being for a piece dyed black. If we wanted to dye this piece with indigo, it would cost but a few shillings more for dyeing, and the manufacturer gets a couple of cents more per yard for blues instead of blacks to cover the extra cost of dyeing.

This cloth in question is a heavy weight serge, 22 to 23 ounces, 55 inches. The cost is as follows:

Warp and Weft, 83 lbs. at 42,		$34.86
Weaving,		1 95
Mending		.61
Dyeing and Finishing,		5.84
		$43.26
10% for sale expenses, etc.		4.32
Total cost of making,		$47.58
54 yards at 94c. per yard,	$50 76	
Cost of making,	47.58	
Profit,	$3.18	

All of the above particulars are taken from the mill-book of a well-known firm of manufacturers situated in the district of Bradford and shows American readers how little profit per piece firms are content to work for. But I go a step further and say that the above profits are if anything above the average, many manufacturers

working for a good deal less. It is a fact that plenty of firms we could name are content to do business on mill profits alone, and the profits shown in the above fabrics when the mill profits are also added, will be by no means sufficient to leave a reasonable profit on the amount of capital sunk. In these better things such as we have outlined, manufacturers can count on there being "wage for working," but on fabrics selling at half the price, profits have reached the vanishing point.

Textiles in New Jersey.

The 1900 census statistics of the textile industries in New Jersey are as follows:

	Year.	WAGE-EARNERS. Average number.	WAGE-EARNERS. Total wages.	Value of products, including custom work and repairing.
Silks and Silk Goods,	1900	24,157	9,232,532	33,966,762
	1890	17,445	6,634,610	30,760,371
Dyeing and Finishing Textiles,	1900	7,074	3,003,491	10,488,963
	1890	3,735	1,878,137	6,183,397
Cotton Goods, including cotton small wares,	1900	5,681	1,930,940	6,930,766
	1890	5,632	1,984,659	5,902,615
Worsted Goods,	1900	3,910	1,097,197	6,823,721
	1890	937	271,442	2,058,662
Woolen Goods,	1900	2,943	1,013,232	4,755,393
	1890	4,165	1,402,158	5,652,166
Hosiery and Knit Goods,	1900	1,841	446,608	1,748,148
	1890	1,250	312,564	1,091,403
Carpets and Rugs, other than rag,	1900	1,171	379,423	1,522,827
	1890	579	187,354	817,242
Shoddy,	1900	156	56,027	685,048
	1890	117	35,605	389,640
Textiles Total,	1900	46,932	17,159,450	72,921,528
	1890	33,860	12,706,529	52,855,496

The silk branch stands at the head with a long lead. Here we find an army of 24,157 workers in 1900, each earning on an average, $382 per year.

The wages paid to the employees is the best basis upon which to rate the importance of any industry to a community. The 46,932 textile workers in New Jersey received in 1900 on an average $363 per year for each person, as compared with $375 ten years before. In the other branches we find the yearly wages per worker to be as follows: Silk, $380 in 1890, $382 in 1900; Dyeing and Finishing, $503 in 1890, $424 in 1900; Cotton, $352 in 1890, $280 in 1900; Woolen, $336 in 1890, $276 in 1900; Knit Goods, $250 in 1890, $242 in 1900. Thus, with the exception of silk in which an insignificant increase is recorded, every branch records a decrease in wages paid to the workers, a sombre reminder of the panic years of this decade, from the effects of which New Jersey like the rest of the country, has not yet recovered.

The woolen industry in this state shows a marked decrease during these ten years, and is the only branch which, rated by the number of employees, shows a decrease, although the cotton industry barely held its own.

Silk manufacturing scored an increase in the number of employees of over 38 per cent.

Hosiery and Knit Goods in Pennsylvania.

The advance reports of the 1900 census state that there are 319 knitting mills in Pennsylvania which retains its position as the second state in importance as regards this industry. The figures are as follows:

Year.	No. of Mills.	No. of Workers.	Total wages per year.	Av. yearly wages per Operative.
1890	236	15,433	$4,262,299	$275
1900	319	21,540	5,825,783	261

According to these figures wages in Pennsylvania knitting mills decreased about 5 per cent. in the ten years following 1890. This is not to be wondered at when we consider the violent panics through which the country passed during that decade and the disturbance to industry following the tariff tinkering of 1893.

The census report goes on to state that Pennsylvania has ranked second in the manufacture of hosiery and knit goods since 1870, having in that year 28.8 per cent. of the total value of products for the United States, and 22.9 per cent. in 1900. Philadelphia is the leading centre of the industry. It differs from the other great centre, Cohoes, N. Y., and its neighboring towns, in that the products in Philadelphia are chiefly hosiery, while the New York mills produce mostly underwear.

The German Palatines, who settled in Germantown about 1698, appear to have introduced the manufacture of hosiery into the United States. At the semi-annual fairs established by William Penn in Philadelphia, the German hosiery exhibit was always a striking feature.

In 1810, 107,508 pairs of stockings were manufactured in Pennsylvania, 53,981 of which were made in Philadelphia county. In 1858 there were 700 hand-knitting frames in operation in the city of Philadelphia. Some of the most famous and successful knitting machines have been invented in this city. A peculiarity of the industry in Philadelphia in early days—the carrying on of knitting as a house occupation by hand-frame operatives—has persisted somewhat to the present time.

While Pennsylvania has a representation of large mills unequaled by any other state except New York, it has also a large number of establishments located within its borders which employ very few machines, and use knitting merely as an outlet for some other business or manufacturing enterprise.

Textiles in New York State.

Of the wages paid to textile workers in 1890 throughout the Empire State, and amounting to $22,672,339, by far the largest part, 39½ per cent. went to the operatives in knitting mills. Then follow the other branches of the industry in the following order: Carpets and rugs, 14½ per cent.; silk, 12½ per cent.; cotton, 12 per cent.; dyeing and finishing, 6½ per cent.; woolens, 6 per cent.; worsted, 5½ per cent.; felt, wool hats and shoddy, 3½ per cent.

The 64,901 employees in 1900 received an average yearly wage of $349, as compared with $342 for each of the 61,097 workers in 1890, showing an increase of 3804 in the number employed and practically no change in the rate of wages.

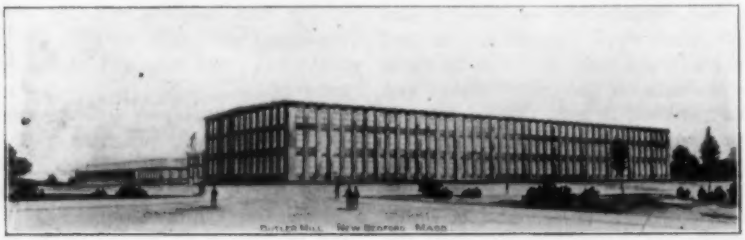
Compared with this total increase of 3804 employees in this ten years, the knit goods industry alone shows an increase of 6642 or over one-third. Losses in the other branches, notably silk with 4858 less, accounts for the discrepancy, and at the same time affords a striking illustration of the tendency of special industries to concentrate. Here we see during the decade from 1890 to 1900 the silk industry declining while the knitting industry is increasing in New York.

The year rate of wages in the knitting mills of this state was $298 per employee in 1890, and $338 in 1900, an increase of 13 per cent. This apparent rise in wages is directly opposed to the popular impression that wages in New York knitting mills were lower in 1900 than in 1890. The statistics have presumably been collected with great care by the census bureau, but the statement of an increase of 13 per cent. in wages during the panic period from 1890 to 1900 .s a good deal to swallow.

To gain his end in Life's fierce tussle,
Man's two best friends are Hope and Hustle. —Puck.

The New Butler Mill, New Bedford, Mass.

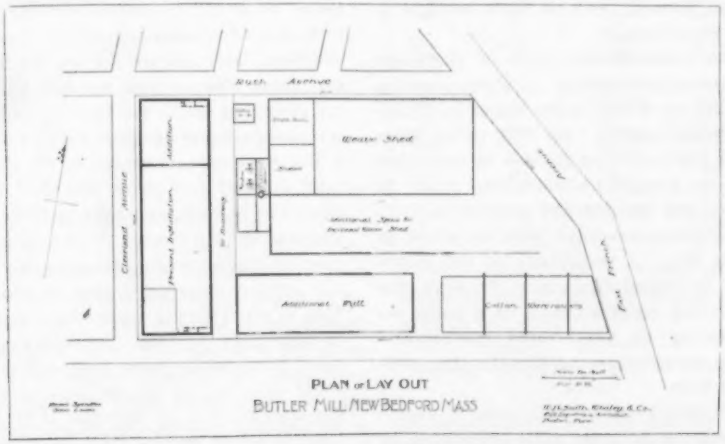
The incorporation of the Butler Mill of New Bedford, with Wm. M. Butler of Boston as president, came as quite a surprise to many people, as little had been heard concerning it until the announcement the other day. Its entire capital stock of $700,000 was subscribed immediately on the opening of the subscription, and the list of stockholders includes many of the best financial men and mill men in New England. Work is being started at once, and it is expected that the plant will be in operation the first of the year. A variety of fine goods will be made, consisting of lawns, lenos, dimities, etc.



The mill is located at the extreme eastern end of the city, and the arrangement of the buildings, covering as it does all the available space, is considered by mill experts to be one of the finest. The plant provides for two spinning mills, one of which is to be erected at once, 150 feet wide by 500 feet long and three stories high, and designed for 100,000 spindles, of which 60,000 spindles will be installed now.

The second spinning mill will contain 50,000 spindles more, making a completed plant of 150,000 spindles. The present weave shed will be 207 feet by 435 feet and contain 2000 looms beside the cloth room and slashers; this building will be enlarged later so as to provide room for 1000 more.

Power will be furnished from a central station located between the spinning mill and weave shed and adjoining the latter; this is laid out for two vertical cross-compound condensing engines directly connected to alternating current generators, although only one engine of about 1300 H. P. will be installed at present.



The boiler room is designed for seven vertical boilers which will be operated by induced draft. The generators are to be 40 cycle, 3-phase, alternating current machines, generating current at 600 volts and driving inverted induction motors.

Ample storehouses are planned, and also a two-story office building located between the spinning mill and weave shed, which will contain the offices of the company and also fire-proof vaults. The plans are being made by W. B. Smith Whaley & Co. of Boston, Mass., and Columbia, S. C., who have had extensive experience in electrical driven cotton mills.

Production and Waste from Cotton Combers.

To get the production of a single nip comber, get the weight in grains of the lap per yard, the nips per minute, the inches the feed roll delivers per nip, the number of laps per machine and the minutes for which you wish to find production. Multiply altogether, and divide by the inches per yard and the grains per pound. The result will be the amount of both waste and good cotton. Deduct the percentage of waste and you have the production of good sliver.

Suppose the comber to be running a lap 10½ inches wide, weighing 315 grains per yard, making 80 nips per minute, the feed roll delivering 223 inches per nip, 8 nips to the machine, 60 hours per week, or allowing 4 hours for stoppages for cleaning and various other purposes, leaving 56 running hours per week:—

(315 grs. × 80 nips × 60 min. × 223 in. × 8 × 56) ÷ (12 × 3 × 7000) = 599.42 lbs.

Now suppose you are taking out 16 per cent.; then if 100 lbs. of lap gives 16 lbs. waste, what will 599.42 lbs., or for convenience 600 lbs., give? 100 : 600 :: 16 : 96 lbs.; then for the above supposition the actual production would be 503.42 lbs., as 599.42 — 96 = 503.42.

The above is the correct way to ascertain the production of a comber. Of course, there are other ways, such as taking the weight of a full lap and the length of time it takes to run out, less the per cent. of waste made gives the production, including stoppages. Suppose a lap 10½ inches wide weighs 10 lbs. and runs out in 7½ hours, waste 16 per cent.:—

7½ hours : 60 hours :: 10 lbs. : 80 lbs.

80 lbs. × 8 laps = 640 lbs., including waste. 100 : 640 :: 16 : 102.40.

640 — 102.40 = 537.60 lbs. combed cotton per 60 hours without any allowance for stoppage.

To ascertain the percentage of waste, stop the comber, clean all waste away from back, breaking the waste off quite level and close to the doffer combs. The sliver must be broken off clean up to the block rollers. Then run the machine for any number of nips, say 30, the more you take, the better averages you get, but if you take too many, you will not be able to detect the variation in short lengths of lap so easily. For the given number of nips take all the good cotton and all the waste made in the same time, and weigh them separately; then add weight of waste and cotton together for a divisor, and for a dividend multiply weight of waste by 100. Divide, and the answer will be the waste per cent.

Suppose that in a certain number of nips a comber gives out 391 grs. of good cotton and 79 grs. waste (that is from all the heads together) in the same time, then:—

391 grs. + 79 grs. = 470 grs.

79 ÷ 470 = 16 8/10 per cent.

The above is the usual method of taking the percentage. Where a percentage balance is used, it saves the trouble of making a calculation, as the cotton is placed in one scoop, and the waste in another, and the percentage is indicated at once by the finger.

WAAREN.

Mixing Cotton.

BY PAUL.

As a kind of preface to a few articles that may follow on various subjects, I would like to call the attention of the reader to some of the technical matter at times given us, as though it was instructive to the man in the harness doing the real business of the mill. We soon see how far short of the mark it is and catch on to the difference between what has been swallowed wholesale at some school, other than the mill itself. Theoretical speculations may be all very well for a guide to an outsider wanting to know a few general points as to the routine of mill work, but are not in it for one minute in assisting the man solving the actual problems of mill work for a living.

I propose to go into the subject by putting the scientific theories into actual practice. Of late years, the selection of cotton by mill men has not called for the care or knowledge required to classify various grades; that, to a great extent, has almost become a trade by itself; our cottons are now graded in so many ways that the most a man is required to know is the kind of cotton that will best suit the kind of goods he is to make, considering his location and number and kind of machines in the preparatory processes in proportion to the spinning and weaving machines. Our cottons are now graded by the cotton brokers so that though a man can never know too much about cotton or cottons, yet he can generally get what he calls for at the ruling prices.

When we get into the mixing of cottons in contradistinction to mixing cotton, then we need a little more knowledge as to the affinity of one cotton for another, and how by mixtures we may by judicious handling in the preparatory processes with low speeds, short drafts and more processes effect a saving by using cheaper grades and yet get good yarn. Such results can be secured and they knock the bottom out of that worn-out theory that "you cannot spin a good thread with long and short staple combined."

Before we begin mixing cotton there are a few important points to be attended to which may, if neglected, have a very bad effect on the mixing. One of these is keeping tabs on the cotton as it comes in. When starting a new mill or commencing a new kind of goods or an old one, it is a very important thing to look well after the samples and compare the bales with each sample; the neglect of this precaution has been the cause of much trouble in many a mill, for, though the grading of cotton is well done by the cotton men, yet, as new invoices come in, especially with a new season's crop, though the grade may be named the same, there may be and often is such a diversity in the different bales that it is often advisable to run out all the old mixings, watching them through the processes where drafting by rolls is done, so as to make some slight change for the new mixings, either in draft, twist, set of rolls or speed.

In judging of these things no book or school, other than the mill, under the guidance of a practical man can teach it. The neglect or observance of this rule has been the cause of failure or success in many mills.

When the bales have been compared with the samples and found O. K., the samples should be put on a very long bench, if possible in a room kept at 60° or 70° F. The samples should then be carefully examined. If any are better or poorer than the average, the marks are noted, and when making the mixing these bales should be spread uniformly in several layers, over the whole surface.

A few years ago, a carder advertising in one of our papers stated as one of his good qualities, "that he could save his employer $800 a year by rejecting at the bale." It is all very well to detect these things and

have them rectified, but as a rule carders are hired to make roving out of the cotton sent to the mill.

I mention this to show that we carders cannot expect to have all we desire in a cotton mill. There are many good housewives who would like to have a new cook stove or one of the newest gas ranges, but, when they consider the price and a hundred other things no one else knows of, they conclude to get along with what they have, not but that the new one would not be better, but "we can't get it" and that ends it, so we must do the next best.

So in the mill. In some of our best establishments we cannot get all we would like, and so we must do the best with what is furnished to us. The housewife wonders why John cannot see that she can soon save the price of the new range by saving in fuel, yet John may be a carder who wonders why the powers that be at the mill cannot see how soon they could save the price of a good large mixing room with arrangements for airing the cotton before it goes to the mixing room and openers.

Many carders have wondered why the mill owner cannot see the damage caused by opening a lot of bales in front of a self-feed on pickers and having the stock dumped in like so many old rags. Is it any wonder why the stock does not run well and that it comes out uneven and causes so much trouble with the variations of temperature and humidity that it is often impossible for the carder to stay in the mill?

Well, boys, under these circumstances there is only one thing to do, "grin and bear it" until we find a firm who wants our services, and will give proper facilities for making the mixings, such as the first pickers on the first floor, opening room on the floor above, mixing made from one bale at a time, and when broken thrown down through a hole over the mixing "crate" where steam or hot air can be passed underneath until the whole mixing is so dried that the beater blades in the picker will not beat the dirt into the damp cotton.

When both the dirt and cotton are damp they stick together, and most of the dirt will pass the cards, railway heads, drawing, slubbing and intermediate frames, but begin to be broken up on the fine speeder rolls, ring frames or mules, and then some one will talk about "how little use the inclined trunks are in connection with pickers anyway." The real cause of the trouble is, however, that the dirt leaf and motes were too damp to leave the fibres.

At another time, I will point out how important a point this mixing is applied in the production of cockled yarn, uneven of twist, streaks in the goods, uneven yarn due to defective drawing, and waste. Improper mixing bears the same relation to yarn that shaky foundations and poor supports do to a building.

A Spring Needle Knitting Machine.

At Fig. 1 is shown a knitting machine with improvements for which a patent has recently been granted in this country. The inventor states that in machines employing two sets of spring-needles for knitting ribbed fabric, it is customary to employ two knock-off bars, one bar for each set of needles, the bar for the series of horizontal needles occupying a stationary position, while the bar coacting with the vertical needles is moved so that it acts to knock the loops off the vertical needles while the hooked ends of the horizontal needles occupy a position in front of the series of vertical needles; in other words, the loops are knocked off the vertical needles while the loop of the fabric held on the horizontal needles lies on the shanks of said needles near the points of their beards. In this old form of machine much difficulty is experienced in using heavy yarn or yarn unevenly spun, as well as slack-twisted yarn.

This invention has for its object to

improve this class of knitting machines so that any yarn, either heavy-weight or unevenly-spun or slack-twisted yarns, may be employed in the knitting of a ribbed fabric, as well as the finer, even, and hard-twisted yarns. To accomplish this, means are provided whereby the needle-bar carrying the horizontal needles and occupying a position with their points at the rear side of said vertical needles is moved forward or toward the vertical needles for a distance sufficient only to slacken the strain on the loops then held between the two sets of needles, and the tension on the loops held by the needles having been somewhat relaxed the horizontal needles are held substantially stationary with their front ends behind the vertical needles, while the knock-off bar co-operating with the vertical needles is raised to knock the loop off the upper ends of the vertical needles, and this done the horizontal needles are moved forwardly for their full stroke through the loops then held on their shanks, said needles receiving yarn for the formation of new loops.

The vertical needles, the knitted loops, having been cast off their tops in the meantime, are raised above the horizontal needles that yarn may be fed to the horizontal needles; the latter during their movement rearwardly draw the yarn through the loops on their shanks and lay the yarn held by them across the shanks of the vertical needles, so that the latter when they descend may take the thread, form it into loops which are drawn through the loops then on the shanks of the vertical needles.

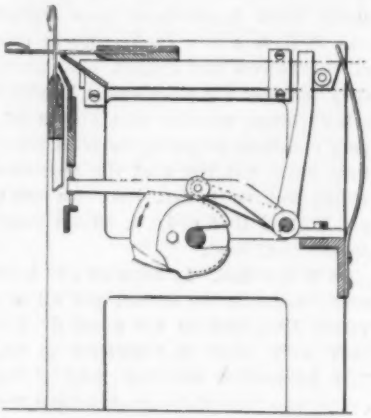


Fig. 1.

In this invention the knock-off bar for the vertical needles when in its elevated operative position occupies a position in and preferably slightly above the plane in which the horizontal needles move, and this bar has a continuous upward movement into the position until the stitches are cast off, said vertical needles at such time also descending.

Figs. 2 to 8 are views showing the parts in the positions they will occupy in knitting a ribbed fabric by this method.

Fig. 2

Fig. 3.

Fig. 4.

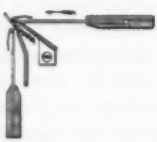


Fig. 5.

Fig. 6.

Fig. 7

Fig. 8.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices, and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market.

Interested parties are referred to the manufacturers for further information. These items are published without charge and regardless of advertising consideration, the idea being to present to our readers a systematic monthly record of new machinery, etc. of interest to textile mill men.

We invite machine builders and others to send us such information for this department.

Bi-knit Fabric. Scott & Williams, 2079 East Cumberland St., Philadelphia, are just about introducing a machine for producing what they call "Bi-knit" fabric. This consists essentially of two plain fabrics in any gauge, fine or coarse, which are knitted simultaneously on a double knitting machine and united by single loops at comparatively remotely removed intervals throughout the fabric.

This results in a very beautiful fabric for underwear purposes and opens up a very broad field for combination of material in the one garment. It will be evident that inasmuch as the two fabrics are entirely separate one from the other, except at the points of juncture already spoken of, that a material such as cotton may be used on the outside of the composite fabric and a material such as silk or wool may be used on the inside of the fabric, and it will also be clear that the face will be entirely made up of the one material and the back made up entirely of the other material, so that neither shows through on the other side.

Then, again, the inner face may have but half the stitches of the outer face, and much coarser yarn can be used. Many desirable effects may be produced in this way. They are confident that this new fabric will find a place for itself as soon as it is placed before the manufacturers, and inasmuch as it is knit upon a machine capable of a production quite as rapid as an ordinary latch needle rib machine, nothing is left to be desired in the way of production.

Cloth Napper. An English firm have recently placed on the market an improved wire napper containing several improvements over their old machine. The lower taper cone speed pulleys are placed nearer together than formerly, so that the belts run inwards instead of outwards, making the whole of the gearing more compact.

Self-Acting Mule. Howard & Bullough, Limited, Accrington, England, are placing on the market an improved cotton mule, which possesses many new features without making any radical changes in the principles of mule spinning.

Yarn Testing Balance. J. H. Henderson, Manchester, England, has designed and is placing on the market a yarn testing balance designed to facilitate the weighing of yarn and to determine its sizes by different systems of yarn numbering.

Dyeing Machine. C. G. Haubold, Jr., Chemnitz, Germany, is placing on the market a dyeing machine for raw materials, constructed according to the Grunhe patent. The principal feature is a combination of a centrifugal extractor with the dyeing apparatus.

Wool Pulling Machine. An English firm has recently brought out a machine for removing wool from sheepskins. It is not properly speaking a wool pulling machine, since the wool is removed by the action of a wire heated to a white heat by electricity and which burns off the wool at the root of the fibre.

DYEING DEPARTMENT

Dye Recipes for July.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $4.

Recipe No. 97.

Orange on Worsted Yarn.

Orange W P on 100 lbs. of worsted yarn.

Prepare the dye bath with

1½ lbs. Orange W P.
(Sykes & Street, 85 Water St., New York.)

3½ lbs. Sulphuric Acid.

15 lbs. Glauber's Salt.

Enter at 170° F., bring to a boil and dye at a boil about one hour, exhausting the bath if possible.

Orange W P produces an excellent shade of orange possessing good fastness.

Recipe No. 98.

Black on Worsted Yarn.

Anthracene Acid Black S B on 100 lbs. Worsted Yarn.

Prepare the dye bath with

6 lbs. Anthracene Acid Black S B.
(Cassella Color Co., 182 Front Street, New York.)

10 lbs. Glauber's Salt.

5 lbs. Acetic Acid.

Enter at 170° F., bring to a boil and dye at a boil for ¾ of an hour.

Then add

6 lbs. Sodium Bisulphate

and continue the boiling until the dye bath is exhausted.

Finally chrome for ½ hour at a boil in the same bath by adding

1½ lbs. Potassium Dichromate.

Anthracene Acid Black S B produces a rich and bloomy shade of black possessing excellent fastness.

Recipe No. 99.

Yellow on Worsted Yarn.

Anthracene Yellow G N on 100 lbs. worsted yarn.

Prepare the dye bath with

4 lbs. Anthracene Yellow G N.
(C. Bischoff & Co., 88 Park Place New York.)

10 lbs. Glauber's Salt.

2 lbs. Acetic Acid.

Enter at 100° F., bring to a boil, boil ½ hour, add 2 per cent. more acetic acid, and boil ½ hour longer.

After-chrome by adding 2 lbs. of Potassium dichromate to the same bath and boiling ½ hour longer.

Anthracene Yellow G N produces a good shade of yellow, which possesses good fastness to light and excellent fastness to milling.

Recipe No. 100.

Reddish Brown on Cotton Yarn.

Toluylene Orange R on 100 lbs. cotton yarn.

Prepare the dye bath with

3 lbs. Toluylene Orange R.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

30 lbs. Common Salt.

2 lbs. Soda Ash.

Enter yarn at 170° F., bring to a boil and boil 1 hour. Then develop as follows:

First make up into a paste—

60 oz. Benzo Nitrol Developer.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

90 oz. Water.

To this add—

6 oz. Sodium Nitrite.

30 oz. Water.

Finally add—

36 oz. Conc. Hydrochloric Acid.

120 oz. Water.

Make the whole up to 600 oz. or 1½ gallons.

For every ounce of dyestuff used take—

30 oz. of the above developing solution.
¾ oz. Acetate of Soda.
¼ oz. Soda Ash.

Or for the above—

1440 oz. or 10.9 gallons Developer.
36 oz. Acetate Soda.
12 oz. Soda Ash.

Enter the dyed material into this bath and work cold for ½ hour, rinse and soap.

When dyed and developed in this way, Toluylene Orange R gives excellent shades of a bright chestnut brown, which possess very good fastness.

Recipe No. 101.

Blue on Worsted Yarn.

Acid Blue No. 5759 on 100 lbs. worsted yarn.

Prepare the dye bath with
1 lb. Acid Blue No. 5759.
(Sykes & Street, 85 Water St., New York.)
3½ lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter at 140° F., bring to a boil and dye at this temperature one hour, exhausting the dye bath if possible.

Acid Blue No. 5759 produces a handsome bright blue, and one that is very serviceable for carpet work.

Recipe No. 102.

Red on Worsted Yarn.

Anthracene Red B N on 100 lbs. worsted yarn.

Prepare the dye bath with
4 lbs. Anthracene Red B N.
(C. Bischoff & Co., 88 Park Place New York.)
10 lbs. Glauber's Salt.
2 lbs. Acetic Acid.

Enter at 100° F., bring to a boil, boil ½ hour, add 2 per cent. more acetic acid, and boil ½ hour longer.

After-chrome by adding 2 lbs. of potassium dichromate to the same bath, and boiling ½ hour longer.

Anthracene Red B N produces a bluish shade of red, which possesses good fastness to light and excellent fastness to milling.

Recipe No. 103.

Brown on Cotton Yarn.

Chlorazol Brown C on 100 lbs. cotton yarn.

Prepare the dye bath with
2 lbs. Chlorazol Brown C.
(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)
30 lbs. Common Salt.

Enter at 180° F. and dye at a boil for ½ hour.

Chlorazol Brown C possesses all the characteristics of the direct cotton colors, and produces an excellent shade of brown.

Recipe No. 104.

Blue on Worsted Yarn.

Benzyle Blue S on 100 lbs. worsted yarn.

Prepare the dye bath with
2½ lbs. Benzyle Blue S.
(A. Klipstein & Co., 122 Pearl St., New York.)
3½ lbs. Sulphuric Acid.
20 lbs. Glauber's Salt.

Enter at 180° F., bring to a boil and dye at a boil for about one hour, exhausting the bath if possible.

Benzyle Blue S produces an even and bright shade of blue.

Recipe No. 105.

Pink on Cotton Yarn.

Benzo Fast Pink 2 B L on 100 lbs. cotton yarn.

Prepare the dye bath with
1⅜ oz. Benzo Fast Pink 2 B L.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)
5 lbs. Glauber's Salt.
1 lb. Soda Ash.

Enter yarn at 130° F., bring to a boil and dye at a boil for one hour.

Benzo Fast Pink 2 B L possesses excellent fastness to light, good fastness to alkalies and ironing, and is fairly fast to washing.

Recipe No. 106.

Black on Cotton Yarn.

Zambesi Black V on 100 lbs. cotton yarn.

Prepare the dye bath with
6 lbs. Zambesi Black V.

(Berlin Aniline Works, 213-215 Water St., New York.)

60 lbs. Glauber's Salt Crystals.

1 lb. Soda Ash.

Dye at a boil for three-quarters of an hour, then rinse and diazotize in a cold bath made up with

3¼ lbs. Sodium Nitrite.

13 lbs. Hydrochloric Acid 32° Tw.

Work in this bath for ¼ to ½ hour. Develop in a cold bath containing

1 lb. Toluylene Diamine Base.

3¼ lbs. Soda Ash.

Work for ¼ to ½ hour, rinse, wash, and soap if necessary.

Zambesi Black V yields a bloomy shade of black, with a bluish violet tone, possessing approximately the same degree of fastness as the well-known brand Zambesi Black D.

Recipe No. 107.

Violet on Worsted Yarn.

Benzyle Violet 4 B on 100 lbs. worsted yarn.

Prepare the dye bath with

2½ lbs. Benzyle Violet 4 B.

(A. Klipstein & Co., 122 Pearl St., New York.)

3½ lbs. Sulphuric Acid.

20 lbs. Glauber's Salt.

Enter at 180° F., bring to a boil and dye at this temperature for about one hour, exhausting the bath if possible.

Benzyle Violet 4 B produces an even and bright shade of violet.

Recipe No. 108.

Red on Worsted Yarn.

Amido Naphthol Red G on 100 lbs. worsted yarn.

Prepare the dye bath with

2 lbs. Amido Naphthol Red G.

3½ lbs. Sulphuric Acid.

(Victor Koechl & Co., 122 Hudson St., New York.)

15 lbs. Glauber's Salt.

Enter at 180° F. and dye at a boil for about one hour, exhausting the dye bath if possible.

Amido Naphthol Red G produces a brilliant and pure shade, equalizes well, and possesses great fastness to light, washing and alkalies.

Recipe No. 109.

Green on Cotton Yarn.

Tetrazo Brilliant Green J on 100 lbs. cotton yarn.

Prepare the dye bath with

3 lbs. Tetrazo Brilliant Green J.

(New York & Boston Dyewood Co., 55 Beekman St., New York.)

25 lbs. Common Salt.

1 lb. Soda Ash.

Enter yarn at 180° F., bring to a boil and dye at this temperature one hour.

Tetrazo Brilliant Green J produces an excellent shade of green for a direct cotton color.

Recipe No. 110.

Red on Worsted Yarn.

Amido Naphthol Red 2 B on 100 lbs. worsted yarn.

Prepare the dye bath with

2 lbs. Amido Naphthol Red 2 B.

(Victor Koechl & Co., 122 Hudson St., New York.)

3½ lbs. Sulphuric Acid.

15 lbs. Glauber's Salt.

Enter at 180° F. and dye at a boil for about one hour, exhausting the dye bath if possible.

Amido Naphthol Red 2 B produces a brilliant and pure shade, equalizes well and possesses great fastness to light, washing and alkalies.

Recipe No. 111.

Brown on Cotton Yarn.

Tetranil Brown R Conc. on 100 lbs. cotton yarn.

Prepare the dye bath with:

6 lbs. Tetranil Brown R Conc.

(New York & Boston Dyewood Co., 55 Beekman St., New York.)

25 lbs. Common Salt.

2 lbs. Sal Soda.

Enter at 180° F., bring to a boil and dye at this temperature one hour.

After-treat for ½ hour at 150° F. in a bath made up with

2 lbs. Blue Stone.

4 lbs. Acetic Acid (30 per cent.).

Tetranil Brown R Conc., when dyed according to the above directions, gives a color possessing good fastness to light and washing.

It is well adapted for hosiery dyeing and is readily discharged a pure white.

Recipe No. 112.

Black on Worsted Yarn.

Anthracene Acid Black S E on 100 lbs. worsted yarn.

Prepare the dye bath with

6 lbs. Anthracene Acid Black S E.

(Cassella Color Co., 182 Front Street, New York.)

10 lbs. Glauber's Salt.

5 lbs. Acetic Acid.

Enter at 170° F., bring to a boil and boil for ¾ of an hour.

Then add

6 lbs. Sodium Bisulphate

and continue boiling until dye bath is exhausted.

Finally chrome for ½ hour at a boil in the same bath by adding

1½ lbs. Potassium Dichromate.

Anthracene Acid Black S E produces a rich and bloomy shade of black, possessing excellent fastness.

Parti-Colored Mixtures in Piece Dyes.

It is well known that white and colored mixtures can be obtained in piece dyeing by using mixtures of mordanted and unmordanted raw stock in manufacturing the goods.

As a result of some experiments, the writer obtained parti-colored mixtures, that is to say, several colors in the same mixture. A portion of the raw stock was so colored that in the subsequent piece dyeing the shade would not be changed. This dyed wool was mixed with mordanted wool. Several colors were used in the raw stock, thus giving more than two colors in the finished goods.

By twisting dyed yarn with yarn made from previously mordanted raw material, many new effects can be obtained in fancy yarns. The raw stock is colored with dyestuffs that will not bleed in the subsequent process of piece dyeing. For instance, red is colored with Fast Diamine Red F, Diamine Scarlet B, or 3 B; blue with indigo or Alkali Blue; yellow with Anthracene Yellow C; light green with Brilliant Fulling Green B; brown with combinations of Fulling Yellow O, Aniline Black, Anthracene Chrome Black, Diamine Red F, and Anthracene Yellow C.

The loose wool, top or yarn is mordanted in either cold or hot baths; if in a hot bath, less material is required to give a dark shade when piece dyed.

Following are three methods of mordanting: 1, Bath made with 2 cu. in. muriatic acid to each quart of water; handle for one-half hour at 60 to 70 degrees C.; 2, 15 to 25 grains of chloride of lime to each quart of water; handle for one-half hour at 60 to 70 degrees C., then add 1 cu. in. muriatic acid, and handle for ten minutes longer; 3, ½ to 1 cu. in. sulphuric acid 66 degrees B. to each liter of water; handle for one-quarter of an hour at 60 to 70 degrees C.

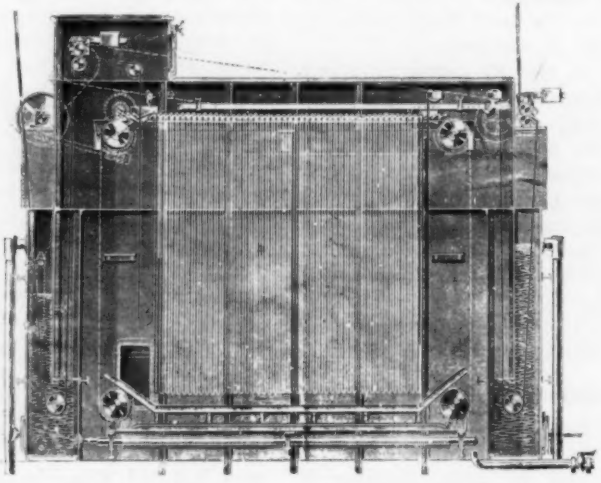
Wool treated by either of the above methods acquires a very light yellowish tint, losing but little of the natural color. The following example will show the method of making mixtures in piece dyes: 75 per cent. mordanted wool is mixed with 12½ per cent. of yellow and 12½ per cent. of red wool, or 50 per cent. mordanted wool is mixed with 50 per cent. of brown wool. The yarns spun from these mixtures are woven either in plain or fancy patterns. A great variety of shades may be used for mixing with the mordanted stock, and an unlimited number of fancy effects can be obtained in fancy yarns.

For piece dyeing, Brilliant Fulling Green B, Formyl Blue B and Formyl Violet give good results. If both the raw stock and the pieces have been dyed with alkali colors, the goods can be fulled readily with ammonia.—Oesterreich's Woolen und Linen Industrie.

Machine for Bleaching in the Open Width.

The advantages of bleaching cloth in the open width are well known; the goods are more uniformly treated than when crowded in folds; by the latter method, the edges of the goods are liable to be bleached more than the centre.

A machine builder in Alsace has recently designed an open width bleaching machine shown in the accompanying illustration which embodies some novel features. Steam under pressure is introduced into the central chamber, at each end of which there is built a narrow compartment; the ends of the inner chamber project into this compartment to within a short distance of the bottom; the construction is plainly shown in the illustration.



The compartment at the left contains the solution with which the goods are to be treated. The cloth enters the central chamber by first passing down through the liquor, then upwards on the inside of the partition to a pair of squeeze rolls, where the surplus liquor is extracted, falling back into the compartment from which it came. The cloth is then carried by a chain through the chamber in the form of long folds, as shown.

The inner chamber is heated by corrugated pipes placed near the bottom. The steam pressure thus produced, forces down the liquor on the inside of the partition, and forces it up on the outside, as shown in the diagram. It is claimed that the air in this chamber is forced downwards by the steam pressure and escapes through a pipe and valve, shown in the illustration.

The compartment at the right contains the rinsing solution. After the cloth has been carried to this end of the machine, it passes through the rinsing bath upwards and then upwards to a second pair of squeeze rolls, where the surplus liquor is extracted. The goods then pass to the next machine for another treatment with a different solution. By having a series of these machines, the operations of bleaching, such as boiling, souring and treating with alkali, are carried on in succession by one passage of the cloth, the whole process requiring about one-half of an hour.

The claims made for this process are as follows: A saving of time, labor and material; more uniform results; absence of spots or stains; no danger of injuring the goods; preservation of the elasticity of the cloth; simplicity of operation, which permits

the machine being operated by one workman.

Two thicknesses of wide goods can be bleached at one time, and if desired, two widths of narrow goods can be handled side by side in the same machine. The builders claim a production of 3300 yards of wide goods per hour.—L'Industrie Textile.

Formic Acid and Formates in Dyeing.

The use of formic acid and its salts has hitherto been restricted by the high price of these products. I remember that the formates of both alumina and iron were tested before 1868 as mordants in dyeing, and that the results were not favorable; these salts do not part with the acid contained in them as easily as the corresponding acetates, when exposed to the air.

Formic acid having a coefficient of affinity fourteen times greater than acetic acid, it is very probable that the tension of the vapor from the formates is less than that from the acetates, and that the latter, for this reason, decomposes more easily when exposed on the drying racks.

This condition, unfavorable when the mordants serve for fixing the color by exposure to the air, may prove an advantage in favor of formic acid in other cases. For example, with certain dyes in which the coloring matter tends to displace the acetic acid of the acetates used with the mordants. Such is the case with nitroalizarine, the color of which when made with acetate of alumina is destroyed in a few hours, even in the presence of a large excess of acetic acid, while the color made from the same dye by formates is preserved when care is taken to add 1543 grains of formic acid per quart. Similar cases are so numerous that it is useless to multiply the examples.

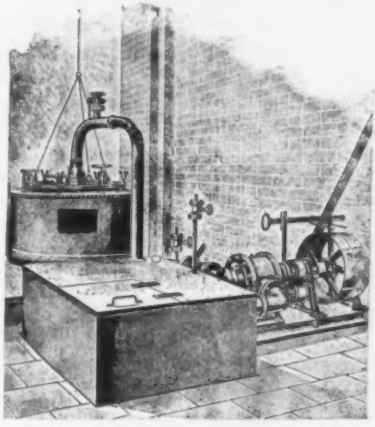
Today when formic acid is offered at a price that permits competition with acetic acid, it can be used in the manufacture of indiennes by substituting it for acetic acid.

Formic acid can be advantageously substituted for acetic acid in the preparation of certain tin mordants, as well as in the boiling of thickeners, since formic acid does not convert starch into dextrin nor attack the fabric. On the other hand, it does not dissolve certain colors as readily as acetic acid; for example, methylene blue.—Albert Scheurer, in the bulletin de la societe industrielle de Mulhouse.

A New Dyeing Machine.

The accompanying illustration shows a new dyeing machine recently brought out in Germany, for dyeing raw stock, particularly in indigo dyeing. The principal feature of this apparatus consists in the arrangement by which the material is extracted in the same vessel in which it is colored.

The wool is packed tightly into the cylindrical holder, which is then



closed by a suitable cover. A pipe leads from the holder to the dye tank, and circulation from the tank through the wool and back to the tank is maintained by a pump.

When the dyeing process is completed, the pump is stopped and the cover removed from the holder. By opening a valve the surplus liquor in the holder runs into the tank, which

is set somewhat lower. By raising the holder about an inch it is converted into a centrifugal extractor. The extracted liquor runs into the dye tank.

The advantages claimed for this machine are as follows: It is not necessary to wet the wool previous to dyeing; the wool can be packed while dry into the holder; air is completely excluded from the material during the dyeing operation, which occupies but a short time; the amount of dye liquor required is very small, being from ⅛ to ¼ of that needed for the old processes, resulting in a great saving of steam. The dye liquor can be easily removed from the tank.

The colors are said to come out very uniform, and the stock is thoroughly impregnated with the dye; it is claimed that, owing to this fact, the color crocks much less than by the old methods. The wool is not felted or tangled, as it remains undisturbed during the dyeing process. The extracting requires but a few minutes after the dyeing is completed.

The oxidation of the indigo on the fibres takes place during the extracting, so that it is not necessary to spread the wool on the floor; it can be taken from the machine and placed immediately in baskets.

Only one workman is required to run the machine, and it is said that the entire operation from the time the wool is placed in the machine until it is removed, requires but 35 minutes. The apparatus requires but little space, and can be placed wherever most convenient in the dye house.

A New Bleaching Process.

A year ago, we called attention to a process of bleaching, which had been recently patented in France by Henri Lagache, in which carbonic acid was added to the chloride of lime solution, in order to free the hypochlorous acid from hypochlorite. Since that time, the process has been tested in the bleachery of D. Fauvarque Fils, Pont-de-Nieppe, near Armentieres, with results that confirm the claims of the inventor, Lagache.

Every practical bleacher knows that to bleach the same grade of cotton yarn to the same degree of whiteness, less chloride of lime is required in the latter part of the day than in the morning.

A satisfactory explanation of this phenomenon has not, heretofore, been advanced. Lagache and D. Fauvarque, the proprietor of the bleachery, have investigated the subject together, and found that it is due to the formation of acid in the chloride of lime solution. Organic acid is formed in the bleaching solution by reason of the oxidizing action of the chloride of lime on the vegetable fibre, and this acid is converted finally into carbonic acid.

As a fresh supply of bleaching solution is added to the bath, the organic acid is converted into hydrate of lime, and the bleaching efficiency of the bath thereby reduced. By standing over night, the organic acid resulting from the oxidation of the cellulose combines with a considerable part of the chloride of lime, making it necessary to add a larger quantity of chloride of lime in the morning when starting work, than is found necessary during the day, to bring the bath to the required strength. To remove this cause of variation, Lagache introduces carbonic acid into the bleaching solution; this is done either in the bath itself, or in the tank where the chloride of lime solution is kept for use.

The tests made at the bleachery in Armentieres, showed that for bleaching 1609 lbs. of yarn to the same degree of whiteness, 338 lbs. of dry chloride of lime or 21 per cent. of the weight of the goods was required by the old, while 297 lbs. or 18 per cent. did the work by the new method.

This new process has resulted in a saving of two casks of chloride of lime per week, or 55 tons per year, in the works of D. Fauvarque Fils.—Deutsche Faerber Zeitung.

MILL NEWS.

Cotton.

New Mills.

•Alabama, Huntsville. We have been advised by T. W. Pratt that the new plant to be built here in which he and New England capitalists are interested, will be a print cloth mill. They are not yet ready to give details.

•Alabama, Piedmont. Work is being pushed rapidly on construction of the new mill for the Coosa Mfg. Co. It is expected that the buildings will be completed by October 1st.

—•Alabama, Stevenson. The Broadus Cotton Mills are now in operation making yarns, from 8s to 16s. This company has capital stock of $50,000. S. S. Broadus is president and treasurer and H. C. Ray, general manager. Plant is equipped with 2500 ring spindles and operated by steam.

•Georgia, Dawson. Sixty-five thousand dollars have been subscribed toward the $100,000 required for the cotton mill projected at this place. Organization of company is to be perfected Sept. 1. W. H. Davis is interested.

•Georgia, Lindale. Work has been started on the foundations of the new mill to be erected for the Massachusetts Mills in Georgia. The new building will be 600x131 feet, three stories.

•Louisiana, Alexandria. The Alexandria Cotton Mills will build an entirely new plant instead of purchasing some Western mill as was first contemplated. Details for mill are under consideration. I. W. Sylvester is secretary.

Massachusetts, New Bedford. The Gosnold Mills Co. has been incorporated with a capital stock of $1,100,000, to operate the Howland Mills of the New England Cotton Yarn Co.'s plant, which will be taken over by the new concern. This mill contains about 80,000 spindles. All the yarn finishing machinery will be taken out and removed to the Bennett Mills. 1600 looms will be installed and the yarn product will be made into cloth. In this way and through the control of knitting mills in New York State, it is expected that the entire capacity of the New England Cotton Yarn Co.'s mills can be utilized. The new company is financed through Kidder, Peabody & Co. Richard M. Saltonstall is president and John E. Rice treasurer. The management will be in close harmony with the yarn mills.

Massachusetts, North Adams. The new weave shed to be erected by the Arnold Print Works will be 402x248 feet at one end and 185 at the other, brick, two stories high. A separate engine and boiler room will be built, 150x80 feet. A storehouse, 156x87 feet, two stories, will also be built. An additional story will be put on the Eclipse Mill. Work will start at once on building.

Missouri, St. Louis. Jas. L. Logan, 513A Whittier St., is interested in forming a company to manufacture a few lines of narrow cotton fabrics in the South, and is getting information on braids, tapes, shoe webbings, children's hosiery and underwear.

•New Jersey, Rahway. E. D. Burns & Co. of New York, previously reported having leased a factory building at this place, have started manufacturing lace curtains, upholstery goods, etc., employing about 200 people.

North Carolina, Greensboro. The Proximity Manufacturing Company of Greensboro, North Carolina, has purchased the Wharton, Rankin, Hendrix and other farms, containing about 2000 acres, adjacent to and just north of the city, and have thereon selected a site for their new mill and mill village. The mill proper will be situated about one mile north of their present pant, and will be surrounded by more than 600 cottages, also churches and schools, which the company will build for the exclusive use of their operatives. Their two villages will be connected by a broad avenue, graded and macadamized. The new mill will be owned and operated by the Proximity Manufacturing Company, but to facilitate keeping separate records of the operations of each plant, will be known as the "White Oak Cotton Mills." The main building will be 750 feet in length by 150 feet in width, three stories, with the necessary additional buildings, such as engine and boiler rooms, dyehouse, office, warehouses, etc. The equipment will be 60,000 spindles and 2000 looms, the operation of which will require about 2500 hands. This means adding to this community at least 6000 people. The product will be exclusively indigo blue denims. The present plant, now operating 1000 looms on the same fabric, will immediately be increased to 1200, thus giving this company a total of 3200 looms, making them by far the largest producers of denims in the world. The annual production of the plant will be fully 50,000,000 yards, amounting to about $5,000,000.

—•North Carolina, Hildebran. F. C. Quickel of Lincolnton is president of the Henry River Manufacturing Co., which has been recently organized with capital stock of $65,000; M. E. Rudisill, general manager and D. W. Aderholt (Cherryville), secretary and treasurer. They propose building and equipping a plant with 3000 spindles for manufacturing yarns, 24s to 40s.

—•North Carolina, Salisbury. The contract has been let for erecting the new mill for the Kesler Manufacturing Com-

pany. The main building will be 258 by 90 feet.

—*Rhode Island, Hope. Preparations are being made for erecting the new Phenix Mill for the Hope Company. The new mill will be 200 by 125 feet, brick, 2 stories high. It is expected to have the mill, which will be used for weaving exclusively, ready to start operations by the first of November. About 800 Northrup looms will be installed, to be driven by two 300 h. p. electric motors. The present plant will be equipped entirely with the preparatory machinery, the looms now there to be taken out. An addition will be built to the picker house and a new engine house built.

—*Rhode Island, Warren. Contract has been awarded for the construction of the new weave shed for the Parker Mills. The new building will be about 300 by 278 feet, one story, with "saw tooth" roof.

*South Carolina, Abbeville. A temporary organization has been formed for the projected mill, with John R. Blake, president; L. W. White, vice-president; J. F. Lyon, secretary and R. E. Hill, general manager.

—*South Carolina, Belton. The Belton Cotton Mills have decided to enlarge the plant and have let contracts for erection of the buildings. The new mill will have an equipment of about 25,000 spindles and 800 looms. The capital stock has been increased to $700,000.

—*South Carolina, Easley. Work has been started on construction of the new buildings for the Glenwood Cotton Mills, recently incorporated with capital stock of $250,000, W. M. Hagood, president and treasurer. The plant will be equipped with 16,320 ring spindles and 412 looms for making 84 by 84 fine sheeting. The product will be sold by Woodward, Baldwin & Co.

*South Carolina, Ninety-six. The cotton mill projected here will have a capacity of 10,000 spindles, and will be capitalized at $200,000. Capt. E. M. Lipscomb, who was interested in a mill project two years ago, but which failed to materialize, is to be president of the concern and Capt. E. A. Smyth, vice-president.

—*Texas, Brenham. At a meeting held recently by the directors of the Brenham Cotton Mill, plans and specifications were submitted. The main building is to be 138 by 101 feet, two stories, with boiler and engine house 88 by 41 feet, one story. Site has been secured and bids are being received on material, although it has not been definitely settled whether to build with brick or stone.

*Texas, Hillsboro. The Hillsboro Cotton Mill Co., capitalized at $100,000, will start production of goods, duck, September 1st, 1902. A. L. Lowrey is president of the company; T. E. Tomlinson, treasurer, and J. A. Sharpe, superintendent. Plant will be equipped with 2500 ring spindles and 80 looms.

—*Texas, Weatherford. The Weatherford Cotton Mills Company has been organized with capital stock of $50,000, with W. S. Fant, president; W. D. Carter, vice-president; C. C. Littleton, secretary and L. M. Bailey, treasurer. They will start work as soon as plans for buildings have been definitely decided.

Enlargements and Improvements.

*Alabama, Birmingham. The Avondale Mills have recently completed installation of additional looms and spindles in the plant, also new boiler and engines.

—Alabama, Huntsville. The Eastern Manufacturing Co. and the Lowe Mfg. Co. will double the capacity of the mills. The capital stock of the Lowe Mfg. Co. will be increased also. The Eastern Manufacturing Co. increased theirs recently to $100,000.

—Alabama, Sylacauga. The Central Mills will make some improvements to the plant, including addition of five spinning frames.

—Connecticut, Ansonia. Work is nearing completion on the new dye house for the Ansonia O. & C. Co.

Connecticut, Shelton. The Derby Cotton Mills have let contract for erection of an addition, 65 by 40 feet, three stories, brick, to the plant.

Georgia, Canton. At a meeting held recently by the stockholders, it was voted to install a dye plant in the mill and add about 100 more looms.

—Georgia, Covington. An addition is being built for the Covington Mills, in which 5000 more spindles and 140 looms will be installed.

Georgia, Elberton. Swift's Cotton Mill contemplates installing new electrical light equipment in the mill. This company operates 7000 spindles and 174 looms.

—*Georgia, Rome. The Anchor Duck Mills, recently reported to install additional machinery in the mill, advise us that they will not add more than 4,000 spindles.

*Maine, Lisbon. Some new machinery is to be installed in the weave shed of the Farwell Mills, which are adding another story to that building.

*Massachusetts, Fall River. The Stafford Mills have begun to receive the new spinning frames to be installed in the mill. Two pairs of mules have already been taken out. They will put in 96 new frames altogether, of 296 spindles each.

—Massachusetts, Griswoldville. An addition is being built to the bleaching department of the Griswoldville Mfg. Co's plant, which will greatly increase the capacity of that department.

—Massachusetts, Taunton. Twenty-four combs and four drawing frames have been added recently to the Canoe River Mills.

Mexico, Parras. The Parras Cotton Mills will increase the capacity of the mills by installing six new looms and 1000 spindles.

—*Mississippi, Meridian. Contract has been let by the Meridian Cotton Mills for additional machinery to be installed in the mill. About $40,000 will be expended on picking, carding and intermediate machinery, 2880 spindles, etc. When completed mill will have an equipment of 10,560 spindles and 400 looms.

*New Hampshire, Nashua. The Jackson Company is making good progress on work of installing the new machinery in the plant.

New York, Hornellsville. The Liberty Silk Company is making some enlargements to the plant.

—*North Carolina, Charlotte. The new weave shed for the Dover Yarn Mills is under construction.

—*No. Carolina, Cooleemee. The Cooleemee Cotton Mills, previously reported to build an addition to their weave shed, and now operating 40,000 spindles and 1300 looms, will install 20,000 more spindles and 600 looms in same when completed. This concern manufactures standard sheetings and drills.

*North Carolina, Hope Mills. The Hope Mills Manufacturing Co., reported to build a weave shed and make other additions, have appointed Lockwood, Greene & Co., Boston, Mass., engineers in charge of building and equipping same. They will install 200 looms in the new addition, which will give them a total of 951 when completed. The plant is equipped with 12,582 spindles.

North Carolina, Lexington. The Nokomis Cotton Mills are adding 50 Draper looms and 7000 Howard & Bullough spindles to the machinery equipment of the plant.

—North Carolina, Raleigh. The Pilot Cotton Mills are building a small addition in which 2,000 more spindles will be installed. This will give them a total of 7,600. A number of new Draper looms will also be added.

—North Carolina, Sanford. The Sanford Cotton Mills will enlarge the plant. They will add 300 more looms, expending about $30,000, which has already been subscribed, for the purpose.

Pennsylvania, Wilkesbarre. A new building, 193x86 feet, five stories, is to be erected for the Wilkesbarre Lace Mfg. Co. The bleaching and finishing departments will be in the new structure.

*South Carolina, Greer Depot. The Franklin Mills, reported last May to double the capacity of the plant, have placed contracts for 6500 additional spindles and 250 looms.

*South Carolina, Yorkville. The Tavora Mills contemplate installing 100 looms and other machinery for manufacturing fancy cotton goods. They have recently increased the capital stock for making improvements, which are estimated to cost about $15,000.

*Tennessee, Humboldt. The Humboldt Cotton Mills have issued $14,775 worth of new stock for purchase of new machinery and increasing the capacity of the mill.

*Tennessee, Knoxville. The new building under construction for the Knoxville Cotton Mills is to be used for weaving purposes. They will make warp and filling yarns instead of knitting yarns as at present.

Texas, West. The West Cotton Mills are to increase the capacity of the plant. The spindles will be increased from 4100, now running, to 7500.

Mills Starting Up.

—*Georgia, Barnesville. The Barnesville Manufacturing Co., which has been reorganized with capital stock of $135,000, to be increased later to $200,000, will resume operations about July 1st. J. B. Thurman is now president of the company and Merritt Thurman, treasurer. They will manufacture cotton yarns, 6s to 24s. Although the mill is equipped with a dyehouse, that will not be used at present.

*Massachusetts, Clinton. The Sterling Worsted Company's mill, reported leased by W. A. Coggswell of Fitchburg, will be operated by a company, which will be incorporated, as the Bellevue Mills. Capital stock is placed at $15,000. They will start operations about Aug. 1, making men's wear. This mill is equipped with two sets cards and 20 looms. J. H. Pickford is also interested.

Massachusetts, Uxbridge. The Royal Woolen Co. expects to have all the machinery in the plant in operation in a short time. They now run one set of cards and 10 looms. The mill is equipped with five sets of cards.

—*North Carolina, Asheville. Operations have been started in the new plant of the Wm. Whittam Textile Co., making corduroys.

—*South Carolina, Charleston. The Royal Bag & Yarn Mfg. Co. has moved into its new mill recently completed and started operations.

Mills Shutting Down.

—*Wisconsin, Janesville. M. G. Jeffries, who has purchased the Janesville Cotton Mill building, advises us that the plant will be used for electric purposes and that there is no probability of its being operated in the future as a cotton mill.

Woolen.

New Mills.

Alabama, Florence. D. A. Sharp writes us that he wants a pair of wool roller cards for custom work, two-cylinder cards. His former plant was washed away by a flood in March, and he is going to start up again.

—*Connecticut, Danielson. The Plainfield Woolen Co. will do the finishing for the Chase Worsted Co. The latter concern are now taking out the reed machinery that was formerly in their building, and expect soon to have their 10 looms in operation.

*Kentucky, Louisville. The Eclipse Woolen Mills Company's plant is expected to be in operation August 1. About 240 looms will be run. D. A. Chenoweth is president of the company and John P. Chenoweth, manager.

*Maine, Newport. Work has been started on the foundation of the new wool-pulling factory under construction for H. J. Weymouth, of Bangor, Me. The building will be 105 by 105 feet, two and one-half stories, with basement.

*Maine, Skowhegan. The Marston Worsted Co. recently purchased some land and will build a new mill, 200 by 70 feet, three stories with basement. They will install 100 new looms and finishing machinery. A new dye house, 40 by 80 feet, one story, and a new boiler house will also be built. Three new boilers and an engine will also be added, to drive dynamo for power and lighting purposes.

—*Maine, Waterville. Work is well under way preparing the new woolen mill for the Chase Woolen Co. The old buildings purchased are being repaired and remodelled and lumber has been received for the new buildings.

Michigan, Detroit. The Pioneer Woolen Mills Co. has been incorporated with capital stock of $50,000, by C. C. Wortley of Ypsilanti, W. M. Finck, John P. Puhl, C. S. Wortley and O. H. Dardelle.

—*Massachusetts, Webster. John W. Dobbie is president of the Merritt Woolen Co. recently reported incorporated to manufacture worsted goods; Josiah Perry, treasurer, and Henry Merritt, secretary and superintendent. A good part of the machinery has been received and operations will start as soon as possible.

*New Jersey, Changewater. The Hopatcong Worsted Mills are now in operation, with about 150 employes. A 100 h. p. engine will probably be added in a few weeks. A stone building will probably replace the wooden addition to the stone mill.

—New Jersey, Hightstown. Frank Geyer is interested in establishing a new mill at this place and proposes having plans prepared for a building 250 by 80 feet, 3 stories, brick.

*Oklahoma Territory, Oklahoma City. Work is progressing rapidly on erection of the new woolen mill, and it is thought the building will be ready for machinery some time in July.

*Virginia, Basic City. Preparations are being made to start up the woolen mill mentioned some time ago.

Enlargements and Improvements.

—Illinois, Chicago. The Western Felt Works will in July begin the addition of another story to their factory, giving them increased capacity for drying their felts. They have for sale a 90-yd. tentering and drying machine, handling goods up to 80 inches wide; operated 2 1/2 years; in perfect working order, and is to be replaced only for one handling heavier felts.

*Maine, Dexter. The Morrison Woolen Company has started up two picker machines in their new mill, which will soon be running full.

*Maine, Sanford. The Goodall Worsted Company is making fair progress with work on addition to the mill.

—Massachusetts, Boston. A subscriber wishes to buy a set of iron frame woolen cards, secondhand, but in first-class condition, 40 inches wide and 48 inches diameter. Letters addressed "Cards"—care of Guild & Lord, Boston, will be forwarded.

Massachusetts, Dodge. An addition, for the purpose of doubling the present capacity of the plant, is to be built to C. W. Pike's satinet mill.

—Massachusetts, Hinsdale. Some changes are being made to the Hinsdale Woolen Co.'s mill.

—Massachusetts, North Chelmsford. An addition, 40 by 72 feet, three stories, is being built for Geo. C. Moore, manufacturing worsted yarns. Drawing and spinning frames and carding and combing machinery will be installed in the new addition. He has recently added 20 spinning frames and two sets drawing frames to the mill equipment.

—Massachusetts, Worcester. The Hogg Carpet Co., whose plant is located at Auburn, has receievd a large government order for goods. They will install eight new looms in the mill.

Minnesota, Faribault. C. H. Klemer & Sons, proprietors of the Faribault Woolen Mills, are adding four more looms to the plant.

—*New Hampshire, Lebanon. An addition, 80 by 50 feet, is being built to Carter & Rogers' mill. A new boiler and engine room, 80 by 40 feet, will also be constructed. They will install additional cards and looms as previously reported. A 125 h. p. engine will also be added to the plant, now operated by water power.

—New York, Fishkill. The Matteawan Manufacturing Company has secured the old Swift machine shop and remodelled same for making fur hats, in connection with their main plant.

—*Pennsylvania, Philadelphia. The Kennebec Worsted Co., Ltd., expects to have the new addition to the plant in operation during the month. The building is 3 stories, brick, and will be equipped with all new machinery, including new boiler, Noble comb and drawing and spinning frames. When completed, they will have a total of 4 sets drawing, 24 spinning frames, 5 cards and 5 combs.

Pennsylvania, Philadelphia. The Glenham Mills, Glenham, N. Y., which have been idle for some time, have been purchased by Thomas Develon's Sons, proprietors of the Victoria Carpet Mills. The machinery will be removed to Philadelphia, where a new mill will be erected and put in operation by September 1.

—*Tennessee, Knoxville. The Knoxville Woolen Mills are installing 40 more broad looms in the plant.

—*Virginia, Fredericksburg. The Melville Woolen Co. is to make extensive improvements to the plant, including installation of a new water wheel and 10 new looms. They will also build an additional story to the mill.

—Wisconsin, Baraboo. The Island Woolen Company is building an addition which will be used as a picker house.

Mills Starting Up.

—*Massachusetts, North Oxford. It is reported that Fred N. Thayer is prime mover in deal to purchase the mill leased by the Glen Woolen Co., which has not been running the mill for about four

months, from F. Walker James, New York. Some repairs are to be made to the machinery, but this will not take more than two weeks. D. J. Coughlin is mentioned as probable manager of the mill under new owners.

—*Massachusetts, Oxford. Operations have been resumed in Andrew Howarth & Son's mill, which has been closed the past two months. It is thought that the mill will be running to its full capacity by July 1st.

*Massachusetts, West Millbury. The Ramshorn Mills, lately operated by W. Lowenthal, will be started up shortly by Edwin Hoyle and Thomas Windle, under firm name of Hoyle & Windle. They will manufacture union goods.

—New Jersey, Trenton. The Bordentown Rug Factory, of Bordentown, Frank Josten, proprietor, will be removed to this place if present negotiations prove satisfactory. The plant was previously operated by Frank Geyer, who failed, Mr. Josten subsequently getting possession of the plant.

Knit.

New Mills.

*Alabama, Childersburg. Machinery is to be shipped July 1st for the new mill built for the Childersburg Knitting Mills, recently incorporated with a capital stock of $5000. Dr. T. J. Powell is president of the company and C. H. Butler, treasurer. They will make ladies' and men's hosiery, operating 12 knitting machines, and using steam power.

Connecticut, East Glastonbury. A new stockinet mill is to be built on the site of a former paper mill, owned and operated twenty years ago by Short Bros. A New York concern will lease and operate the plant. Leverett Weir, near whose residence the plant is to be located, will build a new dam and flume.

—*Indiana, Huntington. It is proposed to start the new mill at this place with capital stock of $65,000, of which $40,000 has been taken. Plans have been prepared for a building 135 by 40 feet, two stories, with addition of engine room, dye house and office building. Site has not yet been decided upon. This is the plant in which Peter Martin, A. L. Beck and H. Harter are interested.

Michigan, Detroit. A new concern, known as the Forrester & Cheney Co., has recently been established at this place and has started manufacturing fine hand-made gloves and mittens. James A. Forrester is president of the company and Charles E. Cheney, secretary and treasurer.

—*New York, Canastota. The knitting mill started here recently by E. E. Randall, making cotton half hose, has a capacity of 120 dozen pair of hose a day.

*New York, Depew. The Depew Knitting Company has been incorporated with capital stock of $200,000, for manufacturing fine underwear and hosiery. The Troy Knitting Company's plant at Troy, Pa., has been purchased and will be established here. A temporary building has been leased and operations will start July 1, with about 120 people. A new mill will be erected and more people employed. The new plant is expected to be ready early in the fall. Those interested in the new concern are: W. F. De Witt and Joseph Stead of Troy, Pa.; J. R. H. Richmond, A. D. Bissell, Frank H. Goodyear and C. W. Hammond of Buffalo.

New York, Utica. The Regal Textile Company has purchased the Charles A. Mann property on Broad, Main and Second streets, and will erect a new mill on the site. The new building will be 156 by 60 feet, and four or five stories, with basement. The power house will be a separate building.

*North Carolina, Randleman. The Pearl Hosiery Mfg. Co. has the new mill in operation, making misses' and children's ribbed hose, operating 9 knitting machines, 9 ribbers and 5 loopers. Dr. W. I. Sumner is president of the concern and Chas. C. Robbins, treasurer and superintendent. The plant is operated by steam. Goods are sold partly direct and through E. H. Hamilton & Co. They propose adding some new machinery.

*Ohio, Cleveland. N. J. Rich & Co. will start work on the new six-story mill to be erected, July 1st, and expect to start production of goods in same by Jan. 1. The capacity in general will be increased when plant is removed to new building. Nothing bought yet.

—*Pennsylvania, Collegeville. The Perkiomen Knitting Mills, a copartnership formed by William Todd, Jr., and Herbert C. Spooner, will start operations July 1st. They will make men's and ladies' hosiery, operating 37 knitting machines.

—*Pennsylvania, Hamburg. The Hamburg Knitting Mills, recently destroyed by fire, will be rebuilt as soon as possible. They will erect a new building, 100 by 30 feet, 2 stories, with an engine house, 12 by 20 feet. The capacity of the new mill will be greater than that of the old one.

Pennsylvania, Philadelphia. The Iona Hosiery Company is a new concern recently established at 1926 East Boston avenue, to manufacture lisle, fancy and plain half hose. Plant is equipped with 20 knitting machines, 10 ribbers and 6 loopers. Goods are sold direct.

Pennsylvania, Pottsville. J. C. Adcock Bros. & Co., manufacturers seamless hosiery and cotton half hose, have dissolved partnership. Mr. Thomas H. Adcock will continue the business. John C. and William L. Adcock have started a separate plant under name of J. C. Adcock & Bro., to manufacture seamless cotton hosiery. A new mill, 32x78 feet, three stories, is under construction, at Ninth and Laurel streets.

Pennsylvania, Reading. The Mt. Penn Knitting Company is a new concern which will soon start operations in the building vacated by the Hampden Knitting Company, which removed to a new mill. The concern is capitalized at $40,000. Dr. J. Y. Hoffman is interested in the company, which proposes incorporating later and extending the plant. Women's and children's underwear is to be made, and later the manufacture of hosiery will be added. Charles Diest is to be superintendent of the mill. It is expected that operations will start in about two weeks.

*Pennsylvania, Robesonia. Men's seamless half hose are made at the plant now operated at this place by H. W. Sheeler. Equipment consists of 20 knitting machines and one sewing machine. Steam power is used. Goods are sold direct.

—Pennsylvania, Robesonia. A new hosiery mill has been recently started by H. W. Sheeler.

*Pennsylvania, Schuylkill Haven. D. D. Coldren, previously reported to start an individual plant, will soon have the mill in operation, making ladies' fine vests. He will operate 3 knitting and 4 sewing machines, using steam power. Robertson & Bruhn are to sell the goods.

*South Carolina, Anderson. The Corona Mills, capitalized at $20,000, with G. W. Evans, president and treasurer, and Wm. A. Power secretary, manager and buyer, will start work at once on construction of their new mill. They will make children's hose and expect to have the plant, which will be equipped with 20 knitting machines and operated by steam, in operation by November 1st. A dye house will also be attached to the mill.

*Texas, Hillsboro. The Hillsboro Hosiery Factory, in which J. F. Turner and J. C. Burkhalter are interested as co-partners, will start operations in a few days, making men's cotton and woolen half hose. They will operate six knitting machines and sell the goods direct. A building was rented for the enterprise.

—*Texas, Waco. A building has been secured and has been repaired for the Waco Knitting Mill Company, which will start operations as soon as possible after the machinery arrives. Plant is to have a dye house attached.

—Virginia, Emporia. H. W. Hall advises us that he is interested in starting up a knitting mill for manufacturing 84 needle half hose.

Wisconsin, Appleton. A company has been formed by David Hammel, Mayor; C. M. Wirth, and Moses Billstein of Neenah, to manufacture knit goods. They will occupy space in the Hammel sales stables. H. Bach of Milwaukee will have charge of the plant.

Enlargements and Improvements.

—Alabama, Alexander City. The Russell Mfg. Co., manufacturing ladies' underwear, will soon double the capacity of the mill.

Connecticut, Addison. The Glastonbury Knitting Company is to build a new building, two stories, brick, for office use, near their No. 1 Mill.

—*Conn., Watertown. Work is progressing on the extension to the Heminway & Bartlett Silk Co's mill, reported last February to be made.

*Indiana, Fort Wayne. During shut down of the Wayne Knitting Mills, six new machines have been installed and will be started up, when plant resumes operations, making high grade lace hose and half hose.

—*Massachusetts, Highlandville. The William Carter Co., capitalized at $300,000, and recently reported adding additional machinery to their underwear mill, operate now about 100 knitting machines and 70 sewing machines.

*Michigan, Detroit. The new plant of the Progressive Knitting Mills has been completed.

—Michigan, Muskegon. The Amazon Knitting Company has started work on building an addition, 42 by 164 feet, one story and basement, to the mill. New annex will be used for a bleaching department.

—*Minnesota, Mankato. The Mankato Mills Co. have rebuilt the picker house recently damaged by fire.

New Hampshire, Gilsum. New and improved machinery for finishing cloth is being installed in the lower mill.

*New York, Valatie. Thomas Trimble, secretary and superintendent of the Harder Manufacturing Co., has been admitted to a partnership interest in the plant. Thirty-six new rib knitting machines (Scott & Williams) have been installed.

—*North Carolina, Chapel Hill. The Blanche Hosiery Mills have installed 30 machines for making plain, fancy and fleeced seamless hosiery. They will erect a new building to which the machinery will be removed and equipment increased.

—North Carolina, Elizabeth City. The Elizabeth City Knitting Mills are about to place additional machinery in their plant.

North Carolina, Shelby. J. F. Williams is negotiating with the Durham Dyeing Co., which formerly operated a plant at Durham, relative to purchasing the equipment and removing it to Shelby, where it would be operated in connection with the knitting mill.

—North Carolina, Winston-Salem. The Shamrock Mills are to install larger boiler and engines in the mill and are getting estimates on same.

Ohio, Dresden. The Muskingum Valley Woolen Mills contemplate installing additional looms in the mill. They have recently added a pants factory to the plant, for making up goods manufactured. New addition is located at Zanesville.

*Pennsylvania, Coplay. The Coplay Knitting Mills, which have recently completed erection of a new addition to the mill, 30 by 40 feet, three and one-half stories, have increased the number of knitting machines to eleven. J. F. Collins is superintendent of the mill.

—Pennsylvania, Philadelphia. John Blood & Bro., manufacturers of ribbed underwear, are having plans prepared for a new five-story mill, 40 by 110 feet, which they are to erect corner Trenton and Allegheny Avenues.

*Pennsylvania, Philadelphia. Herbst & Jones have completed installation of machinery in the new building, upon which previous report has been made. About 60 more people will be employed.

*Pennsylvania, Philadelphia. Work is nearing completion on the large addition being built to John Scanlin & Son's mill.

—Pennsylvania, Reading. Kuersten & Rick, manufacturers of hosiery, have recently added four new machines to the mill equipment.

Pennsylvania, Reading. A four-story addition, 110 by 40 feet, is to be erected by the Noide & Horst Co., manufacturers of hosiery.

Pennsylvania, Riegelsville. A large addition is being built to Lee S. Clymer's underwear mill.

—*Pennsylvania, Williamstown. The Diamond Knitting & Mfg. Co., Inc., an incorporation of the Diamond Knitting Mills, will build an addition to the plant and install 28 new knitting machines in the plant. They now have an equipment of 48 knitting machines and 35 sewing machines. Capital stock is placed at $25,000. J. H. Hoffman is president of the new company; Chas. Hoffman, treasurer, and Wm. S. Shelton, vice-president and manager. Make women's and children's ribbed underwear.

Rhode Island, Pawtucket. George H. Lumb has removed his knitting mill from Jenks avenue to the building of the Collyer Machine Co., 249 North Main street.

—South Carolina, Blacksburg. The Blacksburg Spinning and Knitting Company will purchase additional machinery for the mill.

—*Tennessee, Knoxville. The Knoxville Knitting Mills Co. have started operations in their new building. They have added ten new machines to their previous equipment of 110 knitting machines. Company also has 4 sewing machines.

—*Wisconsin, Grafton. The Sheboygan Knitting Company reported to place carding and spinning machinery at this place, advise us that they propose putting in two sets of cards from the Sheboygan plant and add two more. They will retain one set at Sheboygan to work up waste.

—Wisconsin, Kenosha. The Chicago-Rockford Hosiery Company will install machinery for making hosiery, in two-story addition nearing completion.

Mills Starting Up.

*Canada, Hamilton. Operations have been started in the Chipman-Holton Knitting Co.'s mill, manufacturing seamless hosiery. They expect to have all the machinery running in about 30 days.

—*New York, Hoosick Falls. Francis Riley has purchased the entire plant of the Hoosick Falls Hosiery Company from C. A. Brown & Co. The plant will be taken by Elmer E. Hertzell of New York, who will combine the mill with that of the Falls Knitting Company, and taking active management of both mills. It is reported that operations will be started shortly with the full capacity. High grade balbriggan underwear will be made.

*New York, Mechanicville. The Sagamore Mills will be put in operation in about a month, making best quality of men's fleece lined underwear. Plant will now be known as the Union Mills, having been purchased by the Union Mills, an incorporation controlling the Union Knitting Co. and Harder Knitting Co., of Hudson, N. Y., where all business is done.

*New York, Utica. Operations have been started up in the Otter Knitting Company's mill.

Mills Shutting Down.

—Massachusetts, Highlandville. John F. Brooks & Co.'s mill will be closed June 28th, until July 14th, for the usual vacation.

—Massachusetts, Highlandville. The William Carter Company will close the mill for the annual vacation, on June 30th, reopening July 7th.

—Pennsylvania, Phoenixville. Parsons & Angstadt, manufacturing hosiery, will discontinue operations after July 1st. Parsons & Baker will take the room vacated by them.

Silk.

New Mills.

*Connecticut, So. Manchester. The three new mills for Cheney Bros. have been completed, and will be used exclusively for manufacturing velvet. Most of the departments have already been equipped and are in operation. Electricity is the motive power.

—*New Jersey, West New York. The Palisade Silk Co., capitalized at $100,000, with O. DeForest, president; W. H. DeForest, treasurer and John Nightingale, superintendent, will begin manufacturing silk piece goods, June 15th. Plant has an equipment of 322 double width broad looms. A dye house is also to be built. Will sell goods direct.

—New York, Brooklyn. Ridgewood. Plans are being prepared for a new silk mill to be built at Ridgewood, at cost of about $40,000, by a new company, soon to be incorporated.

—*New York, Deposit. The new silk mill at this place is known as the Leonard Mill and is a branch of the Caspers Silk Co., of Paterson, N. J., manufacturers of silk goods, sewing silk veiling a specialty. August A. Fischer is secretary and manager of the plant.

—New York, New York. The Metropolitan Silk Mills have been incorporated with capital stock of $50,000 by Charles D. Trautwein (Yonkers), William H. Wettlaufer (Manhattan), and Geo. Wettlaufer (Passaic, N. J.).

*New York, Ogdensburg. Bids have been received and are being considered for the erection of the new silk mill at this place.

New York, Rochester. B. Hill Smith, manager of the Buffalo Woven Label Works, Buffalo, N. Y., has disposed of his interest in that concern and will start a plant at this place for manufacturing silk top facings for ladies' shoes.

*Pennsylvania, Lebanon. Work is progressing slowly on the Gloninger Silk Mill, the walls of the second story now going up.

•Pennsylvania, Palmerton. Read & Lovatt, silk manufacturers at Weatherly, and Elmira, N. Y., have completed arrangements for building a mill at this place instead of Bellefonte, as was previously reported. They expect to start work on building in a few weeks.

—•Pennsylvania, South Bethlehem. The Lehigh Valley Silk Mills have started work on construction of their new mills, for throwing silk. It is expected to have same ready to start in December. They are now erecting a dye house in connection with present plant.

Enlargements and Improvements.

•Connecticut, Bridgeport. Work is nearly completed on the new weave shed for the Salts Textile Co.

Connecticut, Willimantic. The Windham Mfg. Co. has recently completed installation of new speeders and 7000 Draper spindles in the mill. It is reported that they contemplate erecting a new weave shed and adding more looms.

New York, Sidney. The Clarke Textile Company will build an addition to the mill and will install new looms in same when completed.

—North Carolina, Fayetteville. The Ashley-Bailey Co. has started work on foundations for a dye and finishing plant, in addition to the new silk mill, which they are also erecting.

—Pennsylvania, Allentown. Operations have been resumed in the Palace Silk Mill, which has been closed for about a week, during which time some repairs have been made to the machinery.

Pennsylvania, Danville. Plans are being drawn for erection of an addition to F. Q. Hartman's silk mill and work will start on construction as soon as possible. The capacity of the mill will be greatly increased.

•Pennsylvania, Freeland. The Freeland Silk Mill, previously reported as contemplating building an adition and installing additional machinery, inform us that the capital stock has been increased to $125,000, and that 12,000 new spindles will be added.

—Pennsylvania, Hazelton. Work is expected to start soon on the erection of a three-story building to the Hazelton Silk Mill. New machinery will be added.

—Penn., Swarthmore. Plans have been made for an addition, 106 by 120 feet, one and one-half stories, for weave shed, for the Victoria Plush Mill.

•Pennsylvania, York. Work has been completed on the foundation for the new addition to the Monarch Silk Mill.

•Virginia, Petersburg. J. N. Stearns & Co. will remove their present dye house to Williamsport, Pa., where new buildings are being erected, and will build another dye plant here.

Mills Starting Up.

•Connecticut, Norwich. The appraisers are taking an inventory of the Owaneco Silk Mill, recently placed in the hands of a receiver, which will take from ten to fourteen days. It is reported that when completed, the mill will be started up.

—•Pennsylvania, Hallstead. It is reported that Paterson (S. J. parties will start up the Hallstead Silk Mill, which has been closed for some time, and that an addition will be made to the mill.

•Pennsylvania, Hallstead. The Hallstead Silk Mill, which has been idle for some time, is to be operated by the Meisch Manufacturing Company, of Paterson, N. J. The machinery is now being repaired and put in running order.

—•Pennsylvania, New Holland. Operations have been resumed in the New Holland Silk Mill, which has been closed for past two weeks.

—•Pennsylvania, Pottsville. The Penn Textile Manufacturing Co., a reorganization of the Schuylkill Plush & Silk Co., has proved unsuccessful in business and the mill has been closed.

Miscellaneous.

New Mills.

Connecticut, Norwich. The Norwich Processing Corporation is a new concern, of which William C. Reynolds is president, Randall W. Palmer secretary, and Gardiner Greene treasurer. They will start up about July 1 as mercerizers, bleachers, dyers and finishers of threads and yarns.

—Massachusetts, Fall River. The American Linen Co. is having plans prepared for a new weave shed, two stories, to be built corner Perry and Almond Sts. Mill will have a capacity of 400 looms.

Masachusetts, Holyoke. John E. Brown has leased the building formerly occupied by the Coburn Trolley Track Company, and will equip the same for mercerizing thread. He expects to have the plant running in about a month or six weeks.

—•North Carolina, Fayetteville. The main structure for the New Jersey Bleaching & Finishing Company, recently incorporated, with James B. Duggan, president; will be 355 feet long, with wings, 110 by 80 feet and storehouse, 150 by 50 feet, brick. The plant will have capacity of 10 tons, or 100,000 yards a day.

—•Pennsylvania, Reading. Paul Rothe of Norristown is president of the Sanitary Dyeing Co., which has recently started operations; T. H. Morgan, of Phoenixville, treasurer, and Christoph Eisfeld, superintendent. They dye, bleach, print and extract for the Trade, cotton and mercerized hosiery, making a specialty of fast and sanitary fast black and colors with lisle or silk finish.

•Rhode Island, Pawtucket. Wm. Halliwell is manager of the Ingrahamville Dye Works, which will soon start up dyeing and bleaching cotton yarns.

Enlargements and Improvements.

•Massachusetts, Fall River. The American Printing Co. is adding more stories on two of the storehouses, increasing them to four stories. They will probably install more printing machinery in the addition to the new printing department. The new mill is well under way.

PERSONAL RECORD.

Cotton.

—Waldo Underwood has been promoted from a secondhand of carding at No. 4 to overseer of carding at No. 5 of the Wamsutta Mills, New Bedford, Mass.

—E. G. Shepardson, formerly overseer of carding at the Lawton Spinning Company, Providence, R. I., is now overseer of carding at the Nemasket Mills, Taunton, Mass.

—J. M. Short, who has had charge of the spinning room at the Alpine Mill No. 2, Morganton, N. C., has resigned.

—Henry Schadewald, a manufacturer of bed spreads and damask table cloths, Philadelphia, was thrown off the elevator at his mill, receiving severe injuries. He was riding on the freight elevator when the platform struck a box which had been placed on the ground floor by a driver. The platform was tilted and Mr. Schadewald fell a distance of several feet. We are happy to report he is now out of danger.

—Robert Shaul, who recently resigned as overseer of carding at W. C. Plunkett & Sons, Adams, Mass., has been appointed as overseer in that department at the Peck Mills in Pittsfield. Jerry McDonald, who was Mr. Shaul's secondhand at the Plunkett Mills, has accepted a similar position under Mr. Shaul at Pittsfield.

—Paul Relleter, formerly of the Merchants Mfg. Co., Fall River, Mass., is now overseer of spinning at the Canoe River Mills, Taunton, Mass.

—Thomas Quirk of Lowell has been engaged by the Cocheco Print Works, Dover, N. H., to take charge of the finishing department.

—A. E. Parkinson is overseer of the spinning department of the Williamsville Mfg. Co., Killingly, Conn. He formerly held a similar position with the Bennett Spinning Co., New Bedford, Mass.

—Ernest Neild, formerly of the Pierce Mfg. Corporation, is now overseer of mule spinning at the Soule Mill, New Bedford, Mass.

—W. F. Manningham has accepted the position of superintendent of the Harden Mfg. Co., Harden, N. C. He was formerly with the Shelby Cotton Mills, Shelby, N. C.

—M. M. Mauney has been succeeded as superintendent of the Shelby Cotton Mills, Shelby, N. C., by W. L. Packard of Lawnsdale.

—Joseph Martin has resigned as overseer of the spinning room at the Hamlet Textile Company's mill, Woonsocket, R. I., and will go to the Victory Mills, N. Y.

—John Meehan, overseer of warping, slashing and web drawing at the King Philip Mills, Fall River, Mass., has resigned after two years' service to accept a position in a similar capacity with the New York Mills, New York Mills, N. Y.

—T. J. McNeeley has resigned as superintendent for the Orangeburg (S. C.) Manufacturing Company.

—John Mills, formerly at the Glenlyon Dye Works at Central Falls, R. I., has become manager of the Mount Hope Finishing Works in Dighton, Mass.

—J. R. Jackson, late overseer of spinning with the Lawton Spinning Company, Woonsocket, R. I., is now acting in a similar capacity with the Attawaugah Co., Killingly, Conn.

—John J. Hart, until recently president and general manager of the Hart Textile Co., Woonsocket, R. I., has retired from active duties in the concern. He is succeeded by George Shutt of the George Shutt Dye Works, Little Falls, N. Y. Mr. Shutt has acquired a large stock interest in the corporation.

—C. H. Hall has resigned as overseer of the dressing department of the mill of the Social Mfg. Co., Woonsocket, R. I.

—William Holliwell, formerly with the Glenlyon Dye Works of Saylesville, R. I., has become manager of the Ingraham (R. I.) Dye Works.

—Cornelius J. Hurley, engineer at the Globe Yarn Mill No. 3, Fall River, Mass., has resigned his position to accept a similar one in Utica, N. Y.

—Daniel Hurley, formerly engineer at the Weetamoe Mill, Fall River, Mass., has accepted a similar position at the Globe Yarn Mill No. 3.

—E. L. Goble has resigned as overseer of spinning at the Eufaula Cotton Mills, Eufaula, Ala., to take charge of the spinning at the Monroe, La., mill.

—H. J. Gourley, formerly of the Dartmouth Mfg. Corporation, New Bedford, Mass., is now overseer of mule spinning at the Howland Mill, New Bedford, Mass.

—M. J. Forsyth of Mays Landing, N. J., has been appointed superintendent of the Sibley Mfg. Co., Augusta, Ga.

—George Dexter, boss spinner at the Pemberton Mills, Lawrence, Mass., has resigned, and will be succeeded by Hugh F. Graff of Methuen, Mass.

—Albert Dean, formerly with the Indian Orchard Co., Indian Orchard, Mass., is overseer of weaving at the Elizabeth Poole Mills, Taunton, Mass.

—John P. Crane of Crane Brothers, Dalton, Mass., manufacturers of toweling, has turned the business over to his brother and accepted his old position of superintendent of the J. L. & T. D. Peck Mfg. Co., No. 1 Mill, Pittsfield, Mass.

—J. M. Creekwood has resigned his position with the Norris Cotton Mills, Cateechee, S. C., and is now employed by the Social Circle Cotton Mills, Social Circle, Ga.

—A. J. Cobb is overseer of carding and spinning with the Trenton Cotton Mills, Gastonia, N. C. He was formerly employed by the F. M. Poe Mfg. Co., Greenville, S. C.

—Alfred Burns is designer with the Corr Manufacturing Co., Taunton, Mass.

—Edward Burgess, secondhand in the Proximity Cotton Mills, Greensboro, N. C., has been promoted to boss weaver, succeeding L. A. Henley.

—Isaac N. Berry has resigned as master mechanic of the Hadley Co., Holyoke, Mass.

—John L. Burton of Hopedale, Mass., has been chosen agent of the Newmarket, N. H., Mfg. Co., and has assumed the duties of his new position.

—T. S. Blacklock, who recently severed his connection as foreman of the dyeing department of the Greene & Daniels Mfg. Co., Central Falls, R. I., received a Masonic charm and a pair of cuff links from the employees.

—R. L. Buice has been appointed assistant overseer of spinning at the Henderson Cotton Mill, Henderson, N. C.

—William J. Brennan, formerly with Robert MacKinnon, Little Falls, N. Y., is now overseer of carding at the City Mfg. Corporation, New Bedford, Mass.

—Samuel Butterworth, formerly of the Merchants Cotton Company, Montreal, is now assistant superintendent at the Baltic, Conn., Cotton Mills Co.

—Oliver C. Allen, late of Lowell, Mass., is loom fixer at the Hutchins Narrow Fabric Co., Springfield, Mass.

—William F. Hodge, recently secondhand of weaving in the Courtenay Mfg. Co., Newry, S. C., is now overseer of weaving, slashing and drawing-in in the Gonzales Cotton Mill, Gonzales, Tex.

Woolen.

—The Muskingum Valley Woolen Mills of Dresden, O., are running in full on fancy cassimeres and are contemplating putting in new looms. The present staff of overseers is George W. Hirst, superintendent; Thomas Cadzow, designer and boss weaver; Charles E. Pfligl, boss carder and spinner; and T. G. Robertson, finisher. William Payntos is the dyer and William Hindle, loom fixer.

—Chris Winessner succeeds John McLaren as overseer of weaving at the Livingstone Woolen Mills, Washington, R. I.

—W. T. Welch is the new wet finisher with the Putnam Woolen Company, Putnam, Conn.

—W. B. Taylor, of Stafford Springs, Conn., boss fuller for the Proctorsville Woolen Mill, Proctorsville, Vt., is to take a position as inspector and examiner at the American Woolen Co.'s mill, Winooski, Vt.

—James Syme, son of John B. Syme of Worcester, has been made superintendent of the Assabet Mills in Maynard, Mass., the largest woolen mills in the United States. Mr. Syme is a young man, graduating from the Textile School at Lowell in 1900, and has since been in the employ of the American Woolen Co. at Lawrence and at Maynard. He succeeds J. W. S. Clark, who has been superintendent a number of years, and who has resigned.

—Peter Sheehan is overseer of dressing at the Oneko Woolen Mill, New Bedford, Mass. He was formerly with the Ashaway Woolen Mill, Ashaway, R. I.

—T. H. Robinson has engaged with George W. Sykes of Reynoldsville, Pa., as superintendent of his new one-set woolen mill, and has begun placing the machinery.

—J. Wesley Pike has been appointed overseer of the weaving department in the mill of the South Chester Mfg. Co., Chester, Pa. He held the same position at the mills of the Esrey Mfg. Co. of the same city for 30 years.

—Harry A. Parr has been engaged as boss dyer by the Guerin Spinning Co., Woonsocket, R. I.

—C. D. Manville, of the Johns-Manmille Company, has left Milwaukee for St. Hyacinthe, near Montreal, where he will take charge of a woolen mill that came under the control of Milwaukee men when the Johns Company and the Manville Company were consolidated. It is understood that Mr. Manville will retain his residence in Milwaukee, visiting the city frequently.

—C. W. McKendrick, formerly carder at Indian Orchard, Mass., Flax Co., is now overseer of carding at the Plainfield Woolen Co., Central Village, Conn.

—W. H. Lacy is superintendent of William Pendergast's woolen mill, Pascoag, R. I. He was formerly designer for the Putnam Woolen Company, Putnam, Conn.

—Bernard Kearney of Holyoke, Mass., has been engaged as overseer of the weaving department of the Graham, Clark Company, Adams, Mass.

—Peter E. Hamil, formerly overseer of carding at the Geo. H. Gilbert Mfg. Co., Ware, Mass., is now overseer of carding at the Centredale Worsted Mill, Stillwater, R. I.

—David Harr, formerly of Evansville, Ind., is the new overseer of weaving for the Madisonville (O.) Woolen Mills.

—G. W. Greenbank, Lawrence, Mass., is now with the H. W. Johns Manville Co., New York, as boss carder.

—P. A. Fagan of Medway, Mass., has been engaged as boss dresser by the Hinsdale Woolen Co., Hinsdale, Mass.

—F. G. Fifield has resigned as overseer of the repair shop of the Arlington Mills, Lawrence, Mass.

—Charles Davis, formerly of Moosup, Conn., is the new overseer of dressing at the Plainfield Woolen Co., Central Village, Conn.

—Hugh Dolge has succeeded Peter Scott as superintendent of the Warren Woolen Company of Stafford Springs, Conn.

—M. D. Capelers is the new boss finisher at the Robinson Mills, South Windham, Me.

—John Clayton, overseer of spinning in the mill of F. L. Sayles Company, Pascoag, R. I., has resigned.

—Fred Berkinshaw, late of the finishing room at the Halle & Frost Mill, Hinsdale, N. H., is to have charge of the finishing room in a large woolen mill in Pittsfield, Mass.

—Mariat Armitage has been appointed overseer of the Brussels carpet weaving department of the Hartford Carpet Corporation, Thompsonville, Conn.

Knit.

—Charles Narrowes is overseer of knitting at the Criterion Knitting Mill, Lowell, Mass.

—Geo. S. Marville, Philadelphia, has gone to Nyack, N. Y., and is with the Nyack Knitting Co.

—William F. Holsapple, Greenwich, N. Y., has accepted the position of boss knitter with the Fort Schuyler Knitting Co., Utica, N. Y.

—H. T. Ballard, formerly superintendent of the B. L. Battle Mfg. Co., Warrentown, Ga., has recently been appointed to the position of traveling representative for the well known firm of knitting machine builders, The McMichael & Wildman Mfg. Co., Norristown, Pa., taking the place recently held by Mr. Walkden. Mr. Ballard's headquarters will be at Norristown.

—Henry M. Brockert has been engaged as manager of the Wapak Knitting Co., Wapakoneta, Ohio.

Deaths.

—John P. Slade, one of the oldest and best known residents of Fall River, Mass., died last month, from heart disease. He was born in Somerset, Mass., Nov. 13, 1824. He was active in the organization of a number of the local cotton manufacturing corporations and had served as president, treasurer or director of several of them. He was also prominent in banking affairs.

—Peter Bailey, a member of the silk firm of Ashley & Bailey, of Paterson, N. J., died recently at St. Joseph's Hospital, in that city, after an operation. He was born in England in 1832 and came to this country in 1865. He was a weaver in Paterson until 1872, when he entered into partnership with Dwight Bailey and established a business which is today the largest broad silk concern in America. With mills at Coatesville and Columbia, Pa., Hagerstown, Md., Ashley Heights, near Paterson, and the large plant in Paterson, the firm employs many thousands of hands and its interests are far spread. Mr. Bailey gave himself entirely up to his business and was not known in public life. He is survived by a widow and one son.

—James Ainsworth of New Hartford, Conn., died early last month. He was born in Bolton, Lancashire, Eng., in 1822. He was brought up at Oldham, where he worked in cotton mills until he was 21 years old, as a fancy weaver, and could make almost any design in cotton cloths. In November, 1844, he came to America and has held the position of superintendent of several different woolen mills.

—James Geldard, who started as a weaver for the Lonsdale Company in 1842, and afterwards served it as superintendent in Ashton, Hebronville and Berkeley, R. I., died in Montville, Conn., recently, at the age of 81 years.

—Solomon Stein, of the woolen firm of Solomon Stein & Co., New York, died June 13th at his summer home at Bay Shore, L. I. Mr. Stein was born in German 67 Years ago, and came to this country with his family when a small boy. He established the present house about 20 years ago.

—John A. Shibley of the banking house of Dean & Shibley of Providence, R. I., died at Phoenix, Ariz., recently. Mr. Shibley was born in Kingston, Ont., in 1866, and went to Providence at the age of 18. Among the projects which he carried out successfully were the consolidation of the National and Providence Worsted Mills, Crompton & Knowles Loom Works, Saco & Pettee Machine Shops at Newton, Mass., and Biddeford, Me.

—John B. Brady, president of the J. B. Brady Carpet Company, St. Joseph, Mo., died at his country home, "Mount Airy," last month. Mr. Brady was born in Virginia. He went to St. Joseph, Mo., in 1868, engaging in the merchandise business. Soon after he laid the foundation for the J. B. Brady Carpet Co.'s establishment. He was one of the most successful business men in that vicinity, and every charitable institution in the city he had liberally aided.

—George E. Weeden, Providence, R. I., died early last month, at the age of 53. After graduating from Brown University he entered into the cotton manufacturing business with his father. Upon the death of the latter in 1893, he took charge of the business, which he continued up to a week before his death.

—Ernest W. Gourd of Quincy, Mass., died June 6. He was a well-known inventor, having designed a number of knitting machines. When only 16 years of age he was superintendent of a mill where 50 hands were employed. He started a mill at Laconia, N. H., and later he transferred the business to West Quincy, Mass.

—Trevanion Barlow Dallas, Nashville, Tenn., died at his home, after an illness of seven months, which had deprived him during that time of all social and business intercourse and activity in life. The death of no resident of that city, although it was not unexpected, could cause more general and heartfelt regret than that of Mr. Dallas. For years as secretary, treasurer and general manager of the Phoenix Cotton Mills of Nashville, and the Dallas Mfg. Co. of Huntsville, Ala., he had led a very active life, managing these two large plants—the latter, especially, being one of the largest in the South—and giving his entire time and close personal attention to every detail connected with both businesses.

QUESTIONS AND ANSWERS

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Red Shade on Cotton Mixed Goods.

Editor Textile World:

Can you tell me how to get the peculiar shade or red cast on the enclosed sample? Roth (238.)

The cloth is made of a mixture of wool stock and cotton; the wool is dyed blue-black, shading on the red. This blue shade on the wool has been used in order to overcome the natural rusty cast that the black cotton possesses.

We advise our correspondent to separate the cotton and wool fibres by hand in a few short threads from the sample to get enough of the wool for the dyer to shade the batches by. In this way, it will be easy to see how much red is required to give the shade of this sample, and there will be no difficulty in matching the color in the goods.

Compensation of aWoolen Salesman.

Editor Textile World:

What would be a fair compensation for a New York salesman to sell the production of a ten set mill? Product is valued at $250,000 per year of cloth selling at 50 cents to $1.00 per yard. Mill charges and ships all goods, and guarantees sales; salesman is expected to secure orders and keep mill in touch with market conditions. What should a mill expect of such a man?

Chene (244.)

A good woolen salesman can command about $4000 per year. A ten set mill is not large enough to warrant the employment of a first-class salesman for its product alone. In many cases, the salesman for such a mill has other non-conflicting accounts, which he manages for a commission on the sales. The rate is about 2½ or 3 per cent. In such a case the agent pays his own rent and other expenses. The fixed charges of a selling organization for a yearly product of $250,000 would amount to about 2½ or 3 per cent., while the mill would lose the advantage of having the salesman stimulated by the fact that his compensation is in proportion to the sales. The manufacturer should expect his salesman to be wideawake, and honest, to work in complete harmony with the mill management and either sell the goods or tell the manufacturer why not before it is too late to apply the remedy.

Finishing Wool Sweaters.

Editor Textile World:

How can we finish wool sweaters to produce the best results? Delta (246).

Sweaters knit on flat or straight machines are usually sewed or crocheted up at the sides, along the length of the sleeve, and at shoulders. The collar is sewed or crocheted to the shoulders.

Circular (seamless) sweaters are usually seamed on a sewing machine which also trims, and then the seams are gone over (covered or filled) to cover up and stay the raw edges on the wrong side of the goods.

The exposed edge of the collar, cuff and sweater bottom, need no finish when made on the straight machine or Leighton circular, for they are knit with a racked or, as the English call it, a shagged edge, which gives a purl edge. Loopers are sometimes used instead of hand, or sewing machines.

Lustering Woolen Cloth.

Editor Textile World:

In the May number of the Textile World appears an article on lustering woolen goods. Does the author refer to face finished goods and are they piece dyed or wool dyed? Does not steaming after pressing have a bad effect on the color? Would not letting the pieces lie around wet for a day or two be apt to cause creases and other marks? Is it claimed that this system is better than the old English boiling process, in which the pieces are wound on rolls?

Timothy (251).

The author of the article referred to undoubtedly had in mind face finished goods. We should judge that they were dyed in the wool, as he says nothing about piece dyeing, although we can see nothing in the process to injure goods that have been piece dyed.

Steam blowing after pressing, we believe, is often resorted to in Europe, where time is not so much an object as in the United States. If the goods have been properly colored, we do not think that this steaming would make the shade uneven.

We do not take much stock in leaving wet pieces lying around, for the experience of the writer has been that damage is sure to result from such a practice.

The old method of winding the pieces on wooden rolls is very slow, expensive and is objectional because the ends of the pieces are very apt to be stained by the rolls. This process is not used much at present. In this country, the steaming machine has taken its place.

Weighting and Finishing Cotton Cloth.

Editor Textile World:
We make single filling ducks and onsaburgs. We are told that we can use Glauber and Epsom salts for weighting and finishing, drying the goods in drying cans, using starch mangel and a drying can machine. Will either of these salts injure the goods? Ottawa (250).

Both Glauber and Epsom salts are used in cotton finishing. These salts often contain a varying amount of free acid, which if dried on the cotton fibres, particularly at the temperature of drying cans, will surely tender it. If, however, the excess free acid is carefully neutralized with alkalies such as soda or ammonia, there is no reason why the fibres should be tendered.

Length of Cross Belts.

Editor Textile World:
How can I find the length of a cross belt? Belt Lace (248).

The calculations to determine the length of cross belts are too complicated to be of much practical value. Where accuracy is desired we would advise measuring the distance by means of a cord passed over both pulleys in the way the belt is to run.

Production and Waste on Cotton Combers.

Editor Textile World:
What is the best way to find the production of a cotton comber, and the waste made in combing?
St. John (249).

An easy and, at the same time, an accurate way to find the production of combers, is to put a can up to the machine and let the sliver run into it for 15 or 30 minutes; then take it away and weigh the sliver accurately. It is then a simple matter to calculate what the production is per hour, per day or per week. Having found the production of the comber in this way, the waste can be weighed for a day or week, and compared with the production of the sliver in the same time.

The production can also be calculated from the speed of the delivery roll and the weight per yard of the sliver, but this is not as accurate nor as easy as the method first given.

Fabric Tables.

Editor Textile World:
Where can I get a table showing the ends per inch, and size of yarn, in the various brown and bleached cotton fabrics, on which prices are quoted in the weekly trade papers? Rock (245).

We do not know of any table such as our correspondent desires, but would thank any of our readers to advise us if one has been published.

The threads per inch and size of yarn can be readily determined by analysis. Analyzing fabrics does not require any special technical experience, and can be made by any intelligent person after a brief course of instruction. It is an excellent plan for every one handling cloths to have each fabric passing through his hands carefully examined, and the record, analysis and market value filed with the samples for reference. This results in a very valuable record, covering all the fabrics handled by each individual, and the value of which increases as time passes.

New Publications.

The Art of Dyeing Wool, Silk and Cotton; translated from the French by M. Hellot, M. Macquer and M. Le rileur D'Apligny; D. Van Nostrand Co., New York; price $2.00.

This work has been reprinted exactly as it appeared in 1789, when it was first translated from the French into English. It treats of the old methods of dyeing only, and is, therefore, of historical interest rather than practical value to the dyer of today, as the introduction of coal tar colors has revolutionized the art of dyeing.

Part I is devoted to the art of dyeing wool, woolen cloth, yarn, worsted, etc.; Part II treats of silk dyeing; Part III the art of dyeing cotton and linen, together with the method of stamping silk and cotton, etc.

Electrical Catechism, compiled from the regular issues of Power; price $2.00; Hill Publishing Company, World Building, New York.

This is a work of 203 pages containing, as the title page states, 533 plain answers to 533 practical questions about electrical apparatus. The author states in the preface: "In the preparation of the subject matter of this book it has been the aim of the author to discuss only such branches of electrical work as may be considered to come within the range of the average central station or isolated plant engineer. On this account the endeavor has not been to cover the entire electrical field, but rather to make the treatment of principles and practice in what might be termed the 'heavier' branches of electrical engineering more exhaustive than is usual in a work of this kind."

Business Hand-Book for the German Textile Industry; by Ernst Flemming; Julius Becker, Berlin.

This is a directory of the German Textile industry, compiled upon a novel plan. The following brief description of the different sections will give an idea of the scope of the work.

Part 1. List of spinners, weavers, dyers, bleachers, printers, finishers, textile schools and public designers, alphabetically arranged by location.

Part 2. Dealers' textiles, arranged alphabetically by kinds of goods and location.

Part 3. List of dealers in dyes and chemicals, arranged alphabetically by location.

General index in English, French, Spanish and German.

Part 4. List of machine builders, arranged by kinds of machinery, which are indicated in English, French, Spanish and German.

General index to machinery section in the four languages.

Part 5. Dealers in raw materials, exporters and patent attorneys.

The use of the four languages mentioned make the work available for the use of English, French, Spanish and German readers.

Accidents to Workmen; by Albert Berthiot; E. Bertrand, Chalon-sur-Saone, France; price, 50 cents.

A treatise on the French labor law of 1898, as it affects accident cases, which is now going into effect in France. This new law makes important changes in the regulation of employment and the treatment of accidents, and the author seeks in this pamphlet to explain the provisions of the new statute whose enforcement is giving rise to many knotty questions at the present time. This text is in French.

The Outlook for Cocoa Culture in Samoa; by R. Deeken; Gerhard Stalling, Oldenburg; price, 50 cents.

A pamphlet by a German who has recently studied Samoa on the spot, and issues this brief statement of his views regarding the prospects of cocoa culture there. He believes them to be excellent, and presents facts and figures to support his views. He has written an account of his visit to Samoa, which is noticed in this issue. The text is in German.

Manuia Samoa; by Richard Deeken; Gerhard Stalling, Oldenburg; price, $1.75.

Germany's colonies are small, but her people take much pride in them and are starting in to develop their colonial resources with the utmost enthusiasm and vigor. The book noticed above is an account of German Samoa by a German officer who lately visited the islands. It is one of the few books that are entertaining as well as instructive. The author apparently studied the islands and their people very carefully and gives the results of his observations in an easy style which almost makes the reader think the scenes lie before him. This effect is increased by the many half-tone illustrations of the country and people. From first to last the account is thoroughly German, and gives unmistakable evidence of German pride in her island possessions, and German conviction that by improving present opportunities in colonial enterprises, the future will bring its rewards. One short chapter is devoted to the American Samoa. The text is in German.

The Manufacture of Bleaching Materials; by Victor Hoelbling; Julius Springer, Berlin; price $3.00.

This is said to be the only book treating exclusively of the manufacture of bleaching materials, a subject that has heretofore been handled in general works on industrial chemistry. This book is illustrated with many drawings of the apparatus required for producing chlorine, chlorides, ozone, peroxides of hydrogen and soda, sulphate of ammonia, carbonate of soda, permanganates of soda and potash, dioxide of sulphur, sulphurous acid and its salts. The text is in German.

Waterproofing Fabrics; by Dr. S. Mierzienski; M. Krayn, Berlin; price $1.50.

This work treats of the chemical processes of rendering fabrics waterproof and the mechanical operation in connection therewith. First is described the preparation of the goods; then follow chapters on waterproofing with acetate of aluminum; impregnating the goods; drying; paraffin, cupric oxide of ammonia, metallic oxide processes; waterproof colored goods; waterproofing with glue, tannin, casein, etc.; production of tarpaulin.

The work is freely illustrated with drawings showing the machines and apparatus used in the various operations. Waterproofing is a subject which has usually been treated in an incidental and imperfect way in works on dyeing and finishing, and this book devoted exclusively to the process will supply a need felt by finishers at the present time. The text is in German.

Dyeing and Bleaching; by Dr. J. Herzfeld; M. Krayn, Berlin; price $2.00.

The first part of this work, which is to be issued in three volumes, has just appeared and treats of bleaching materials, mordants and dyes. It is a very convenient hand book for the dyer who is in constant need of some such work in which the information relating to the materials he is using is arranged systematically and presented in condensed form adapted for the practical work of the dyehouse. The following abstract of the table of contents shows the ground covered by the first volume:

Bleaching materials and accessories; inorganic mordants; organic mordants; red dyes; blue and violet dyes; yellow and orange dyes; green dyes; brown dyes; black dyes; appendix, giving thermometric tables, etc.

The other volumes are now in course of preparation. The text is in German.

The Modern Style; compiled by Julius Hoffmann, Jr.; Julius Hoffmann, Stuttgart; 12 parts. Price, per set, $5.00.

We have received the first six parts of the current volume of this work. It is an elaborate collection of designs representing modern art in exterior and interior decoration. The work has been compiled with great care to show the present state of the art of decoration and will be found of great value to the designers in the various trades, including weaving, embroidery, furniture, book binding, wall decoration, bric-a-brac, architecture, etc. The captions and brief descriptions

of the various illustrations are in German, but as the value of the work consists chiefly in the designs, which speak for themselves, it is suitable for the use of English readers. The first six parts are now ready for delivery and can be seen at this office. Parts 7 to 12 are in course of preparation.

The Sports and Games of Old France; by J. J. Jusseraud; Plon-Nourrit et Cie, Paris.

This work recently issued from the Paris press, owes its origin to the movement now on foot in France to revive interest in athletics and out door sports.

The author first shows the necessity for athletics and then takes up the different sports and games such as the tournament, the chase, tennis, cricket, football, golf, ten pins, billiards, gymnastics, fencing, etc. The work contains many illustrations taken from old prints showing the people of former times engaged in the active sports of those days. The text is in French.

Bulletin of the National Association of Wool Manufacturers.

The issue of this publication just received begins with the 18th installment of The New England Wool Manufacture, which is followed by an article on the Metric System, and usual obituary notices, editorial comments, etc.

The Silk Industry in America; Franklin Allen, C. P. W.; Silk Exchange Building, New York.

This is a reprint of the census bulletin relating to the silk industry, and puts this valuable publication in convenient form for office and library use.

Calculations for Textile Goods, Cotton, Linen, Woolen, Worsted and Silk; by Frederick Frowein, Barmen. Price $2.75.

An excellent feature of this work, which distinguishes it from all others on textile calculations, known to us, is the placing of a sample of the goods side by side with the calculations carried out in detail as is done at the mill. Not only are the quantities of yarn and stock figured out, but a complete estimate of cost is given for each class of goods. The main object of the work is to explain how to calculate textile fabrics by reducing to the metric system the many systems of yarn numbering in use on the continent of Europe. The author has done this difficult work well.

Cotton, linen, woolen, worsted and silk goods are taken up in succession in the first part of the book, and the calculations for wide woven goods are explained.

The second part relates to narrow woven fabrics such as ribbons, elastics, worsted lace, etc.

The third part treats of braids. The work, which is in German, concludes with tables of foreign moneys, weights and measures.

New Color Cards.

—Immedial Sky Blue Powder, Cassella Color Co., 182 Front Street, New York. This card shows three samples of cotton yarn dyed with 3, 5 and 9 per cent., on Immedial Sky Blue Powder, respectively. Full directions are given for handling.

—Katigen Colors on Cotton Suitings. Farbenfabriken of Elberfeld Co., 40 Stone Street, New York. This book contains thirty-two samples of cotton suitings colored various shades with the Katigen colors, and for which full directions are given.

—Alkali Fast Green B and G. Farbenfabriken of Elberfeld Co., 40 Stone Street, New York. This sheet shows four samples of wool goods, two piece dyed, and two printed with Alkali Fast Green B and G.

Diamine Fast Blue C G. Cassella Color Co., New York.

This card shows eight samples comprising cotton yarn, lining and loose cotton, dyed with various shades of Diamine Fast Blue C G, for which formulas and directions are given.

Dyeings on Ladies' Wool Hats. Cassella Color Co., 182 Front Street, New York. This card shows sixty beautiful shades on wool felt suitable for ladies' wool hats. Full directions and formulas are given.

Business Literature.

Jeffrey Screens: The Jeffrey Manufacturing Co., Columbus, Ohio.

An attractive catalogue, in which are described and illustrated the various types of screens built by this company and adapted for screening all sorts of materials.

The extensive line here described, represents but a small part of their product, which includes conveying machinery, mortar mixers, elevators, electric locomotives, saw mills, etc.

Charles Cooper's Machine and Needle Works, Bennington, Vermont.

We have received a copy of the attractive catalogue of the needles and machines built at these works. In addition to the illustrations and descriptions of the machines a list of the parts is given, as well as a description of the various attachments for the machines.

Oils Which Do not Drip. The New York and New Jersey Lubricant Co., 14 & 16 Church Street, New York City.

An interesting little folder containing a description of the non-fluid oils manufactured by this company and which, undoubtedly, will prove very serviceable in many textile trades, where trouble is experienced with oil spots on the goods.

Philadelphia Textile School.

A catalogue of the School of Industrial Art in the Pennsylvania Museum, giving the usual information included in these annual publications.

Woolen Overseers' Association of Eastern Maine; Official Manual.

This association of Maine woolen overseers was organized in 1897, and has had a very successful career. The manual contains a list of the members, portraits and biographical sketches of the officers, a copy of the by-laws and a history of the association. There are also half tone engravings of several representative Maine mills.

Duplicate Repair Parts.

Homer F. Livermore, 85 Pearl Street, Boston, Mass., has recently issued a catalogue describing the many loom repair parts which he carries in stock at all times. He can usually ship all orders for the parts mentioned in the catalogue, upon the day the order is received, while parts not catalogued can be furnished upon short notice.

Additions are constantly being made to the list, and from time to time new pages will be issued. Mr. Livermore asks the trade to send him any loom parts that break, and he will get new patterns to overcome the cause of the difficulty. He claims that his goods are the cheapest, if both quality and price are considered.

In addition to the repair parts, he handles the Crown metal polish for cleaning and polishing all fine polished surfaces; also the giant quick change pipe cutter; brass and copper in sheets, wire, rod and tubing; copper rivets, burs, perforated material, etc.

Colored Cotton Yarns.

The new dye plant of the Whittier Mills at Chattahoochee, Ga., has been started up, and is now in shape to take care of colored work of any description and furnish yarns in any form desired. This plant has been equipped with most modern machinery and with a full knowledge of the requirements of the trade, and they can guarantee satisfactory work and prompt deliveries. The Northern office is at Springfield, Mass., where inquiries should be sent.

A Large Order for Steel Thread Boards.

The new mill of the Massachusetts Mills in Georgia is to be a model one in every respect, and specifications for the spinning machinery provide that frames shall be equipped with L. T. Houghton's steel thread boards with hardened guides. This is for the entire equipment of about 60,000 spindles. This is the largest order yet received for these boards, but mill men are generally waking up to the advantages that the metal board possesses over the wood board. Every competitive trial has shown a saving in broken ends, and while manufacturers may hesitate to throw out old wood boards that seem to be in good condition, they very generally specify the Houghton metal thread boards when ordering new machinery.

A Swiss Cotton Mill.

The following account of a visit to a cotton mill in Switzerland is given in the Cotton Factory Times by a delegate to the recent international labor convention at Zurich:

"A number of us paid a visit to Turgi, about 15 miles from Zurich, to inspect a cotton spinning mill, which we were told was a profit-sharing concern. That is, when the firm have made five per cent. on their capital the workpeople share at the balance.

"There was a moulding shop, a mechanics' shop, a roller and can-repairing place, and a wooden building used as a refreshment room. The mill was a six-story building, with a garret in one portion of it. Inside everything was clean and neat, and the walls were well whitewashed. The manager was there to meet us, and gave us a hearty reception.

"We saw all the processes of scutching, carding, ring spinning and doubling, mule spinning, winding, spindle band making, etc. Most of the machinery was English made. The spinning mules were 1050 spindles long, doing 30s and 40s counts, with three draws of 66 1/2 inches in 46 seconds and 53 seconds respectively. The spinners were on piecework, and earn about $3.10, the big piecer $2.50, and the scavenger $1.90 per 12 days. The piecers are females. There is also a head spinner or overlooker over two pairs. The work seemed good, there being few ends down.

"In the scutching room the men get 60 cents per day, and the boys 50 cents. In the card room there are three men to 22 revolving flat cards, but we could not learn what their wages were. On the drawing frames the girls get 3 3/8 cents per hour.

"In the reeling room the women have a reel of 50 ends, and earn about 30 cents per day. There were females in the packing room at 18 to 19 centimes per hour. Women employed on the intermediate frames are paid 50 cents.

"The machinery was well guarded. One factor in the wages question is that living is cheaper than here, and rents and rates are much less, a five-roomed house being worth about $25 per year. The mill was lit up by electricity. The firm were making their own, and had two powerful turbines."

Ingrahamville Dye Works.

This is a new plant, which is equipped throughout with entirely new machinery and up to date in every particular. Mr. W. Halliwell, the proprietor, was for a long time connected with the Glenlyon Dye Works, and is an expert in his line. The works are thoroughly equipped to dye and bleach cotton yarns in long or short chain warps and skein. They make a specialty of fast colors for bleaching purposes, cross dyeing, ginghams, etc. There are very few works that do this. They are also dyers of turkey reds and indigo blues for all purposes, in either warp or skein. The works are located in Pawtucket, R. I., and are connected by telephone.

Vacation Pointers.

Central Railroad has placed on sale at many of its stations Summer Excursion tickets good going May 1st to September 30th, inclusive, and good for return until October 31st. These excursion tickets cover points East and North including Montreal, and as far West as the Pacific coast. If you are interested send to the General Passenger Department of the New Jersey Central, New York City, for "Summer Excursions."

The Philadelphia Textile School.

The graduating exercises of the Philadelphia Textile School were held on June 5th, and the diplomas, prizes and certificates were awarded for good work dur-

ing the year to those entitled to receive them.

In the Textile School the following prizes were awarded this year:

Associate Committee of Women's Prize, $10, for the best executed work in jacquard design, third year, to Robert J. Carson; honorable mention to William H. Stafford. The Elizabeth C. Roberts Prize, $10, for the best work in color harmony and design, to Herbert M. Remington; honorable mention to Louis E. Ruehlmann. The Miss Clyde Prize, $10, for the best executed work in jacquard design, second year, to Harry Taylor; honorable mention to Frank W. Hoffman. The "Textile World" Gold Medal, for thesis, "Action of Nitric Acid on Cotton," to Percy T. Phillips. New England Cotton Manufacturers' Association Medal, for general excellence, entire course, to William H. Stafford; honorable mention to Robert J. Carson. Dyer's Trade Journal Prize, Chemical Balance, for best results in application of dyes to various textile fibres, to Thomas M. Robb; honorable mention to Lester DaC. Ward, on methods of dyeing silk. Prize Scholarships for school year 1902-1903, awarded to Stephen H. Garner and Abraham A. Levy, and Frederick C. Denkhaus, evening class. Honorable mention to John Kellars, Jr., Wm. J. Maurer, Herbert W. Spalding, Herbert M. Remington and Louis E. Ruehlman.

One of the most important happenings of the year in the school life was the formation of an Association of Alumni among the former students of the textile school. On Friday, June 6th, upwards of 100 members met in annual session and elected the following officers:

Bradley C. Algeo, president; H. J. Maynard, first vice-president; A. Y. Davison, second vice-president; Theodore C. Search, honorary vice-president; H. H. Bosworth, secretary; William Steele, treasurer.

The new directors are: Charles Bond, Samuel Butterworth, Herbert Armstrong, J. S. McMaster, Jr., William Stafford and William C. Robb.

Charles H. Hutchins, Worcester, Mass.; Sidney Paine, Boston; Samuel Thompson, Jr., Philadelphia; Henry G. Lord, Boston, and D. A. Tompkins, Charlotte, N. C., were made honorary members.

Addresses were made by Charles H. Hutchins, of Worcester, Mass., on "Industrial Education," and by Sidney B. Paine, of Boston, on "The Application of Electricity in the Production of Textiles." Seven papers on textile subjects were read.

Presentation of the following papers, by members: "The Value of Textile Education," Mr. Samuel Butterworth (entered 1886); "Marketing Textiles," Mr. Robert T. Francis (entered 1894); "A Chapter on Decorative Design," Mr. William Laird Turner (entered 1889); "Treatment of Worsted Yarns with Alizarine," Mr. William C. Robb (entered 1894); "Relation of the Textile School to the Textile Industry," Mr. Henry M. Wilson (entered 1898); "Machinery and Methods in the Manufacture of Narrow Fabrics," Mr. John Crowther (entered 1890); "The Development of Indigo," Mr. Albert Behm (entered 1899).

A resolution condemning the so-called Grosvenor Bill was presented, and after discussion was referred to a Committee with power to act. The resolution provides for the appointment of a Committee to confer with Committees from other bodies which are opposed to the bill.

The meeting was relieved by several pleasing social events, notably a visit to Cramp's Shipyard, where the party was permitted to inspect the new battleship "Maine" which was being prepared for her trial trip. A coaching trip up the picturesque Wissahickon to a rural Inn afforded a pleasant afternoon, and the Banquet at the Hotel Walton on the evening of the last day of the meeting was a fitting end to a most enjoyable and profitable gathering. Next year's meeting gives promise of at least twice as large an attendance, for those who attended are anxious to be present next year, and intend bringing others with them.

Purification of Water.

The We-Fu-Go and Scaife Water Softening and Purifying Systems are manufactured only by Wm. B. Scaife & Sons Company, Pittsburg, Pa. The We-Fu-Go is a cold intermittent system, and was formerly manufactured by the We-Fu-Go Company, of Cincinnati, Ohio. This Company has been absorbed by Wm. B. Scaife & Sons Company. The Scaife system is a hot continuous system. The following are some of the contracts recently closed by them:

The Hecla Portland Cement & Coal Co., North Bay, Mich., 1500 P; The Hecla Portland Cement & Coal Co., West Branch, Mich., 500 P; The Isaac Harter Co., Fostoria, Ohio, 1000 P; A. A. Simmonds & Sons, Dayton, Ohio, 200 P; American Sheet Steel Co., New Philadelphia, O., 1200 P; National Mining Co., Pittsburg, Pa., 1000 P; Antrim Iron Company, Mancelona, Mich., 1500 P; Ashtabula Worsted Mills, Ashtabula, Ohio, 96,000 gal. per day; W. D. Boyce Paper Mills, Marseilles, Ill., 1,250,000 gal. per day.

These systems are built for any industrial purpose, and for any capacity.

Sizing for Cotton Warps.

Sizeoleum, manufactured by the Arabol Manufacturing Company, 155 William St., New York, mixed with Arabol starch, corn or potato starch, is highly recommended as a sizing for colored cotton warps. It is adapted for use on printcloth warps, sheeting and domestics. No tallow should be used with it.

Charles W. Becker, Agt., Amsterdam, New York.

The growth of Mr. Becker's business has necessitated its division into departments, in order that each specialty may have prompt and efficient attention. In the cotton waste department is conducted purchases of all kinds of mill waste, including cotton, wool, noils, shoddies, wool and worsted yarns. This department also conducts the selling, and has charge of the manufacturing of various classes of cotton and wool substitutes. The cotton batting department manufactures the Amsterdam cotton bat, and the glove lining department has charge of the manufacture and sales of the glove linings, both plain and fancy, including jersey cloth, cotton and wool eiderdowns, tubing, wristing and skeletons. Mr. Becker buys and sells everything in the way of mill waste and substitutes.

A Business Opportunity.

Among special notice advertisements, under the head of "Capital Wanted," a practical chemist and dyer seeks to interest capital in the development of his inventions on a large scale. Many of these processes have already been practically tested in a commercial way, and their value demonstrated. More recent inventions are believed to possess still greater value.

Lowell Textile Alumni Association.

The third annual banquet of the Lowell Textile Alumni Association was held at the school, Lowell, Mass., on the evening of June 5th. The alumni was organized at the time of graduation of the 1900 class. The annual reunions are of much interest and profit to the former members of the school.

Largest Order Ever Given for Economizers.

The power plant of the metropolitan railway system of London is to be provided with the Green economizer. This equipment is said to be the largest ever installed in any country, and will provide approximately 100,000 square feet of heating surface.

Instruction by Mail.

The May number of the handbook of the American School of Correspondence, Boston, Mass., describes in an interesting way the plan of the school for enabling mechanics and others to improve their education without taking time from their work. The school offers courses in mechanical, electrical, steam and textile engineering, instruction being given by mail. Several pages of the handbook, showing actual work done by students, are printed in two colors, the student's work in black and the instructor's corrections in red, giving an excellent idea of the method of teaching. A number of representative letters from manufacturers, students and graduates are published, including several from such distant places as China and New Zealand.

Notes from Lowell.

We have been through a great deal of worry and hard work of late. The help in the mills have been stirred up almost to striking point; like Lowell, however, we have settled down to sober second thought, and concluded that we will not be bad boys, but will get an honest living and let others do the same.

The Hamilton has begun to put in some of the Draper looms, and it is believed the change will work well. The other mills are doing well, and all are running.

There have been but a few changes here. We don't believe in that way, and when a man comes to Lowell, if he is the right kind, he can stay as long as he lives and does the square thing, but he must be a man or we don't want him.

I see by the World that you have done what I believe to be a good thing, asking the readers what they want. Now I have talked with a number, especially the young men. The one great desire is talk and plain talk on manufacturing. They say:

"Give us the first rudiments, and then follow it up to a finish; that is to say, they want to get that knowledge that the older overseers learned when they went to work. We want to know what is the best way to size a warp; what will make the cloth smooth and weave good; what will be the best way to have a good face upon the cloth, and then we want to know how to calculate what is best, whether to have the filling or the warp the heaviest; in fact, we want to know all we can about the best way to manage a room."

I have seen the overseer go around damning the help, and all would be afraid of him. I have seen the overseer come in in the morning and go around amongst the help, and while pleasant, yet he was firm, and the help all liked him. Now what shall a young man do to bring success to his department and gain the victory? This has been one of the many questions that has been asked of me by different men, and, as far as I am able to judge, if you would start out on that line you would increase your benefit to a very large number of your readers. T.

New Bedford Textile School.

The graduating exercises of the New Bedford Textile School occurred last month, too late for a notice in our June issue.

Mr. Christopher P. Brooks, the managing director of the school presided at the exercises. The other speakers were, Geo. R. Stetson, who spoke on behalf of the corporation, and Samuel Ross, who addressed the students from the standpoint of labor. Isaac B. Tompkins, treasurer of the corporation, then delivered the address to the students and presented the diplomas.

The members of the day class receiving diplomas were: Andrew G. Curry, Louisiana; Esley H. Forbes, South Carolina; John H. Hutchinson, New Bedford; John W. Osborne, Indiana; Myron C. Fish, Lester E. Howes, Benjamin Richards and Alberto Mardera of Mexico.

The gold medal of the New England Cotton Manufacturers' Association was presented to Mr. Hutchinson, as the graduate ranking highest in proficiency.

—Birch Bros., Somerville, Mass., are very busy now on their specialties. Their standard mill sewing machine will sew any fabric, wet or dry, thin or thick. There are hundreds of them in use, and they are sent out on approval to mills desiring to make a trial of them.

—Fred W. Dixon, well known in the dyestuff trade and late United States manager for the United Indigo & Chemical Co., has connected himself with the house of A. Klipstein & Co., manufacturers and importers of anilines, dyestuffs and chemicals, and will make his headquarters at the Boston office, 283-285 Congress St. Mr. Dixon has a wide circle of friends who wish him success in his new connection.

—The Pocasset Worsted Co. at Thornton, R. I., have placed a repeat order for the Green fuel economizer in connection with new boilers to be installed shortly.

The Lowell Textile School.

CLASS OF 1902 RECEIVE DIPLOMAS.

The class of 1902 was graduated from the Lowell Textile School last month. The exercises were held in the upper hall and there was a fair sized gathering of friends, relatives and invited guests.

On the platform were the different speakers of the afternoon, including Mr. Cumnock, one of the Trustees, Mr. James T. Smith, Mr. C. J. H. Woodbury and Mr. William W. Crosby, Principal of the school.

Potted plants, palms and flowers of various descriptions and colors, artistically arranged on and about the platform, served as the decorations for the occasion. The program was opened with a delightful selection by the orchestra, followed by the reading of a thesis abstract on "An Investigation of Drawing Processes to Secure Evenness and Strength" by T. E. Ramsdell, B. S., Mr. C. J. H. Woodbury, secretary of the New England Cotton Manufacturers' Association, delivered an able address, and in behalf of the association of which he is Secretary, presented to Edward S. Swift, who out of a possible 100 received the rank of 89 during the course, the beautiful students' medal which is offered by that organization.

It was hard work on the part of the teachers to decide a winner, as Mr. Swift was closely seconded by T. E. Ramsdell, so close in fact, that the faculty expressed regret that the latter could not receive a medal as a recognition of his fine work.

The Graduating exercises showed a degree of progress far in advance of any previous year. It shows that the school is progressive and that finally it will attain the highest excellence in every line of textile work.

Secretary James T. Smith made a brief address in which he advised the graduates to keep closely in touch with the school and assured them that the principal and faculty would be always ready to assist them in solving the problems they met in active manufacture.

Mr. William W. Crosby, principal, spoke on the subject, "The Engineer of Today." He said that the engineer of today is going hand in hand with the other geniuses of the day. It is through him that we receive our clothing and what we eat. He then referred to the great engineering feats of recent years, the telephones, wireless telegraphy, etc.

In closing he paid a high tribute to the young men who were about to be graduated from the school, complimenting them on the work they have accomplished during the past three years and after bidding them a hearty farewell, wished them God-speed and the best of success in their future calling.

"This is the last time," he said, "that I shall address this or any other class in this building, for in the fall we expect to be installed in the new building. But buildings never made schools and unless we continue to have faithful instructors and diligent students we shall not succeed. This class leaves as well equipped as any class we have ever had."

Before presenting the diplomas to graduates, Mr. A. G. Cumnock gave a review of the history of the growth of the textile school. Addressing the graduates, he said: "We have furnished you with the best we had at our command and when you go out into the world strive to do your best. Show yourselves to be men, so that you will be a credit to the school from whence you come."

The exercises came to a close with a number by the Orchestra.

After the exercises the audience were invited to visit the different class rooms and inspect the work of the pupils of the past year.

PROGRAM BY GRADUATES.

Thesis Abstract, T. E. Ramsdell, B. S. An Investigation of Drawing Processes to Secure Evenness and Strength. Thesis Abstract, Clarence E. Craig, A Comparison of the English and International Systems for Numbering Yarns. Class Reminiscences, C. Ernest Curran. Thesis Abstract, Frank E. Burnham, An Investigation of Cotton Softeners.

Diplomas were awarded as follows:

COTTON MANUFACTUPING.

T. E. Ramsdell, B. S., thesis. Investigation of Combinations of Picking and Drawing Processes to Secure Evenness and Strength.

Edward S. Swift, thesis, Comparison of Ring and Mule Spun Hosiery Yarn.

DESIGNING.

Clarence E. Craig, thesis, A Comparison of the English and International Systems for Numbering Yarns.

Charles T. Wing, thesis, The Twist of Yarns and its Relation to the Weave.

CHEMISTRY AND DYEING.

Frank E. Burnham, thesis, An Investigation of Cotton Softeners. Robert R. Carter, thesis, Application of Chromium to Wool, using Potassium Dichromate as a Mordanting Principle. Walter F. Haskell, A. B., thesis, Aniline Black on Paper Stock.

Certificates were awarded as follows: C. E. Curran, Wool and Worsted Spinning, Designing and Weaving. Thesis, The Relative Effect of the Pulley and Plate Gears on the Scaife Lifter Motion, upon the Shape and Density of a Filling Wind.

COTTON SPINNING, DESIGNING AND WEAVING.

Arthur F. Ferguson, thesis, Effect of Varying Amounts of Twist on Breaking Strength of Cotton Yarns. (Thesis with George S. Harris).

COTTON SPINNING.

George S. Harris (Thesis with A. F. Ferguson).

DESIGNING.

Benjamin Holgate, thesis, Original Leno and Sateen Stripe Gingham.

COTTON SPINNING, DESIGNING AND WEAVING.

Harry L. Woodman, thesis, Comparison of Texas and Upland Cotton.

The exercises were opened at 2.30 o'clock with a musical number by the orchestra and following was a thesis abstract by T. E. Ramsdell. Then came the presentation of the Students' medal, which was presented to Edward S. Swift of Lowell. It might be stated right here that it took a little hard work.

Textile Patents.

(*Continued from page 37.*)

Loom Picker-Stick Buffer. 700,965. Francis A. Mills, Methuen, Mass., assignor of one-half to Grosvenor B. Emmons, Methuen, Mass.

Loom Stop Motion. 700,969. Charles E. Mueller, Paterson, and James E. Jackson, North Haledon, N. J.

Loom Fabric Scouring Attachment. 702,116. Paul Spindler, Hilden, Germany.

Loom Shipper Mechanism. 702,346. Charles M. Day, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a corporation of Maine.

Loom Shuttle. 702,281. Charles N. Brown, Boston, Mass., assignor to James S. Wilson, Chelsea, Mass.

Loom Thread-Parting Mechanism. 701,938. Charles F. Roper, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a corporation of Maine

Loom Harness Evener. 701,683. Arthur S. Cowan, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass., a corporation of Massachusetts.

Loom Filling Replenishing Mechanism. 702,876. George F. Hutchins, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass., a corporation of Massachusetts.

Loom Shuttle. 702,672. Ira F. Peck, Warwick, R. I., assignor of one-half to Charles L. Lovering, Taunton, Mass.

Loom Shuttle. 702,703. Neson Caisse, Wilkinsonville, Mass., assignor to D. T. Dudley & Son Company, Wilkinsonville, Mass., a corporation of Massachusetts.

Machine for Cutting Fabrics. 701,910. Henry A. Meyer, Cincinnati, Ohio, assignor to the Wolf Electrical Promoting Company, Cincinnati, Ohio, a corporation of Ohio.

Means for Defining the Beat of the Lay of Looms. 701,973. Charles H. Warren, Pittston, Me., assignor to Draper Company, Hopedale, Mass., a corporation of Maine.

Machine for Treating Flax or Hemp Straw. 701,770. John T. Smith, Heron Lake, Minn.

Machine for Cutting Loops of Pile Fabric. 701,578. John D. Knowlton, Westbrook, Me., assignor to Sanford Mills, Sanford, Me., a corporation of Maine.

Making Mordant Colors. 702,445. Martin Lange and Tadensz Emilewicz, Amsterdam, Netherlands.

Manufacture of Seamless Hosiery with Lacework Stripes. 702,843. Wallace Wilson, Philadelphia, Pa.

Mechanical Warp Stop-Motion for Looms. 702,609. Horace Wyman, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass., a corporation of Massachusetts.

Method of Preparing Flax Fibres for Spinning. 701,183. George H. Ellis, Chicago, Ill., assignor to Deering Harvester Co., Chicago, Ill.

Producing Weaving Diagrams. 701,418. Jan Szczepanik, Vienna, Austria-Hungary, assignor to Societe de Inventions, Jan Szczepanik & Cie., Vienna, Austria-Hungary, a firm.

Process of Dyeing. 703,122. Gustave De Keukelaere, Brussels, Belgium.

Process of Making Weavers' Designs. 703,286. Harry Mackintosh, Shipley, England.

Process of Reserve and Discharge on Textile Fabrics. 702,566. Edmund Knecht, Manchester, England.

Spinning Spindle. 701,806. William Gihon, Chicopee, Mass.

Spinning Spindle. 701,709. William Gihon, Chicopee, Mass., assignor of one-half to May A. Remick, Augusta, Me.

Swivel Loom Picker-Operating Motion. 701,534. Fred Brown, Paterson, N. J., assignor to Joseph Wadsworth, Paterson, N. J.

Tuft Yarn Spool for Tufted Pile Fabric Looms. 701,934. John F. Riddell, Clinton, Mass.

Warp Stop Motion for Looms. 702,654. Henry J. Jarry, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass., a corporation of Massachusetts.

Woven Double Pile Fabric. 701,578. John Killars, Stonington, Conn., assignor to Charles A. Wimpfheimer, New York, N. Y.

Yarn Dyeing Apparatus. 701,444. Carl Wolf, Schweinsburg-on-the-Pleisse, Germany.

Yarn Dyeing Apparatus. 702,002. John C. Hamer, Radcliffe, England.

—The L. S. Starrett Co., Athol, Mass., have placed a large order with the Hartford Blower Company, Hartford, Conn., for blowers for removing dust from polishing wheels.

—The International Sprinkler Co. of Philadelphia, of which Clarke Merchant, President of Merchant & Co., Inc., is the sole owner, have taken orders from the following firms during the past six weeks: Brunswick Refrigerator Co., New Brunswick, N. J.; William Sellers & Co., Inc., Philadelphia, Pa.; American Fire Engine Co., Seneca Falls, N. Y.; C. F. Rumpp & Sons, Philadelphia, Pa.; American Pulley Co., Philadelphia, Pa., Alexander Cameron Co., Richmond, Va.; Blackwell's Durham Tobacco Co., Durham, N. C.; J. S. Thorn, Philadelphia, Pa.; also for 29 cotton seed oil mills of the American Cotton Co., located at Memphis, Tenn.; Dallas Texas; Oklahoma, O. T.; Little Rock, Ark.; Houston, Texas, and other large cities throughout the south.

—The Farr Alpaca Co., Holyoke, Mass., having had a few years experience with two economizers of similar design, have contracted for the Genuine Green Economizer. B. B. & R. Knight also have ordered a Green Economizer to be installed at their White Rock Mill in Westerly, R. I.

—The Whittier Mills at Chattahoochee, Ga., have recently installed 174 spindles and No. 5 A Universal winders, F. D. Babcock, Southern agent of the Universal Winding Co., having charge of the installation.

—Washington, Seattle. A large tract of land has been purchased here upon which Bemis Bros. Co. of Boston, bag manufacturers, propose erecting a three-story brick building for making all kinds of bags.

Rhode Island, Apponaug. The Apponaug Print Works are erecting a water tank, 22x28 feet, with capacity of 100,000 gallons. The tank will be 140 feet high. This will be for the purpose of fire protection.

IN AND OUT OF THE MILL.

Robert Peel, Inventor of Roller Calico Printing.

From the ranks of the working people come those who have fought their way upward despite the barriers of poverty, ignorance and prejudice, and who by their deeds have made history.

Many of the titled families of England owe their present distinction to the good, hard labor of some ancestor who began life humbly enough, but through industry combined with common sense one day startled the country with an important invention or a successful venture in some new avenue of commerce.

Such a man was the founder of the Peel family, whose descendants have been men of might, important figures in the commercial, political and social affairs of England.

About the middle of last century Robert Peel was a small farmer, possessing a few acres near Blackburn. He had a large family whom he bred up to be like himself, sober, industrious and God-fearing. There seemed very little prospect of his having much other capital with which to start them in life, for his farm land was unproductive, yielding at most but a meagre living. The only available occupation in the district offering even moderate pecuniary return lay in the manufacture of a fabric known as the "Blackburn Greys." This was composed of linen weft and cotton warp, and was in demand for course clothing. In the accounts of the Peel family it is spoken of as calico, and is presumably the cloth upon which Peel made his first experiments in printing.

This was in the days before the introduction of the factory system, when thrifty yeomen with families employed the spare hours in weaving at home. Early in life the young Peels were introduced to the manufacture of this fabric. Robert Peel was an honest man and made an honest article which the public wanted, and his trade prospered. His sons were ambitious and industrious, and were of great aid to their father in his work. This gave him leisure and mental ease, so that he was able to devote his active brain to developing possibilities of which he had long dreamed, of printing upon cloth in colors. It was at the time a comparatively unknown art, but the idea had taken strong possession of his mind, and he experimented upon it untiringly. Pewter dinner plates were then in use in families of his station, and it is related that he used these to sketch designs upon. He carried on various experiments secretly, the cloth to be printed upon being ironed by one of the family.

It occurred to Peel that an impression might be taken in reverse upon calico, from a design filled in with colors. Next door to the Peels lived a woman who owned a calendering machine, and, going to her cottage, he put a plate with color rubbed into the figure part and some calico stretched firmly across it, through the machine. This was found to leave a satisfactory impression. It must have been a rough affair with such rough tools to work with, but Peel viewed with delight the crude figure marked upon the fabric, for to him it meant success. Such is said to be the origin of roller printing upon calico.

Peel shortly afterward perfected his process, and the first pattern put upon the market was a parsley leaf; from this circumstance he derived the nick-name of "Parsley Peel" among the townspeople, and is so spoken of to this day about Blackburn.

Stimulated by success, Robert Peel shortly after gave up his farm, and removing to Brookside, a village about two miles from Blackburn, he devoted himself exclusively to the printing business. There with the aid of his sons he successfully carried on the trade for several years. As the young men grew older the concern branched out into various firms of Peels, each of which became a centre of remunerative employment to large numbers of people.

From all that can be learned of the character of the original and untitled Robert Peel, he must have been a remarkable man—shrewd, sagacious and far seeing. His son, Sir Robert, the first baronet, thus modestly spoke of his father

"He moved in a confined sphere, and employed his talents in improving the cotton trade. He had neither the wish nor the opportunity of making himself acquainted with his native country or a society far removed from his native county of Lancaster. I lived under his roof till I attained the age of manhood, and had many opportunities of discovering that he possessed, in an eminent degree, a mechanical genius and a good heart."

The process of calico printing was afterwards greatly improved by one of his sons, the head of the firm of Messrs. Peel & Co., of Church.

Sir Robert Peel, the first baronet, inherited all his father's enterprise, ability and industry. When only twenty years of age he determined to begin business for himself. William Yates, the son of a small inn keeper in Blackburn joined him in the enterprise.

Young Robert Peel afterwards married Nellie Yates, the daughter of his partner, and their son became Prime Minister of England. She died in 1803, only three years after the baronetcy had been conferred upon her husband. She was a woman of personal beauty and nobility of mind, well fitted by nature to grace the high social station to which her husband's success lifted them.

There is seldom, however, great social elevation unattended by some heart ache, and in the case of the Peels it is said that the atmosphere of London social life, so different from what she had been accustomed to at home, proved injurious to the health of Lady Peel, and hastened her death. Her father was afterwards accustomed to say, "If Robert hadn't made our Nelly a 'Lady' she might ha' been living yet."

A Surprise.

Doctor—Nothing serious, I assure you. Your wife merely has a small ulcer on the end of her tongue.

Enpeck—Say, doctor, is that a fact?

Doctor—Certainly, sir! I hope you don't think I would misrepresent the case?

Enpeck—Oh, no; but your discovery that her tongue really had an end seems too good to be true.—Chicago News.

Mistress—Have you always worked in genteel families, Bridget?

Bridget—Always till I came here, mum.

"How do you feel?" asked the leader of the mob, after the tar and feathers had been applied in liberal doses.

"Oh, I feel like a bird!" smiled the barnstormer, glancing at his feathers.

For such wit they allowed him to write home and tell the old folks he was leaving town by the all rail route.—Chicago News.

No Charge for Advice.

Floor walker—I'm very sorry madam, but I can't exchange this hat for you.

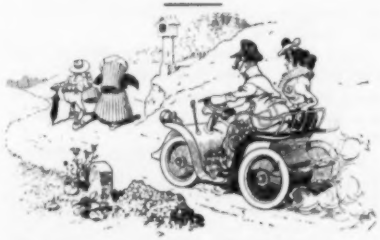
Mrs. Smithson—But my husband doesn't like it.

Floor walker—Then I'd advise you to get a divorce.—Syracuse Herald.

Ambition.

For some the cheering of the throng,
For some the pleasures riches bring;
For some proud titles or a nod
Of recognition from the king;
For some sweet fame or grace to stir
The hearts of weary men with song—
For me to just hold hands with Her,
And let the old world drift along.
—Chicago Record-Herald.

No Danger.



"Now, Emily, we will try our new safety appliance on that couple ahead of us."

This is how it worked.

Shrinking Flannels.

Mr. William Goat—O, dear me! I ate too much of that red flannel undershirt I pulled off the clothesline this morning.

Mrs. Nancy Goat—Why don't you take a drink of water?—Ohio State Journal.

Never Satisfied.

Mr. Homer (in need of a cook)—Have you a letter of recommendation from your last employer?

Applicant—No, sir.

Mr. Homer—Why did you leave your last place?

Applicant—Because the husband and wife were always quarreling.

Mr. Homer—Indeed! And what were they always quarreling about?

Applicant—About the way their meals were cooked.—Chicago News.

"Been fishing on Sunday, have you?"

"Nothing of the kind, sir! I set the lines on Saturday night and took these fish off on Monday morning."—Chicago Tribune.

Doubtful Recommendation.

"Can you make me a set of teeth that will look natural?" asked the patient.

"My dear sir," replied the tooth-carpenter, "the teeth I make are so natural that they fairly ache."—Chicago News.

She Had the Best of It.

The artist of whom the Philadelphia Press tells was of the impressionist school. He had just given the last touches to a purple and blue canvas when his wife came into his studio.

"My dear," said he, "this is the landscape I wanted you to suggest a title for."

"Why not call it 'Home'?" she said, after a long look.

"'Home?' Why?"

"Because there's no place like it," she replied meekly, as becomes a wife who is entirely without imagination.—Youth's Companion.

As Bad as Any Other Day.

The maid—Do you think it's unlucky to get married on a Friday?

The bachelor—Of course. Why should Friday be an exception?—Stray Stories.

He'd Be Good.

Old Bullion—What proof have I that you will make my daughter a good husband?

Suitor—Look at your own bank account, sir.—New York Weekly.

At a Bargain.

Once Uncle Nathan went to town
And bought a brick of gold;
When Uncle Nate undid the brick,
He found that he was sold.

"Gol darn my skin!" he cried, aghast;
"This dew beat all, an' yit
I'm glad I only paid thet chap
Jes' half he ask'd fer it!"

—Boston Post.

Not That Kind of Lines.

Nell—He wrote a lovely poem to Mabel.

Belle—I know, but she got mad and tore it up.

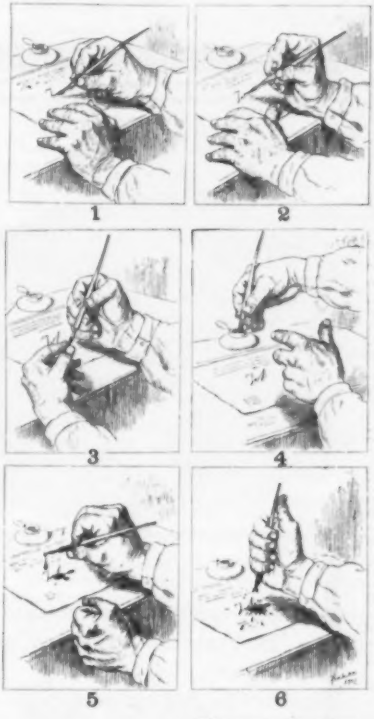
"The idea. Why?"

"He labeled it: 'Lnes on Mabel's Face.'"—Philadelphia Record.

Too Little Romeo for Her.

"I'm afraid I shan't like this place," said the summer girl, as she surveyed the broad-verandahed hotel, where not a man was to be seen. "There's too much balcony and not enough Romeo."—New York Sun.

The Signature.



—Fliegende Blaetter.

The Drag on Your Engine

You know the tightening strain on a belt is a dead drag which must be carried by belt and engine in addition to working load.

Just add up the total of this on your larger belts alone. It's tremendous.

It's what the engine must overcome and drive before a machine moves to produce.

What a waste in power, fuel, oil and wear and tear when CLING-SURFACE will stop it.

CLING-SURFACE will do this. There is no doubt about it. It will stop belt slipping everywhere and let them be run easy, preserve the belts and increase output.

Then this saving of power can be used to make more goods. It's being done elsewhere. Ask us, or order on trial and test, paying if O. K.

CLING-SURFACE MFG. CO.,
199-205 Virginia St., Buffalo, N. Y.
BOSTON: 170 Summer St. NEW YORK: 39-41 Cortlandt St.
PHILADELPHIA: The Bourse.

Buffalo Improved Ventilators

—FOR—

Schools,
Churches,
Foundries,
Factories,

AND ALL INDUSTRIAL BUILDINGS.

Impure Air, Smoke, Steam and Gases Rapidly and Constantly Removed.

BUFFALO FORGE CO.,
Buffalo, N. Y.

BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Alphabetical Index to Advertisements follows this Classified List.

Air Moistening System.
American Moistening Co., 150 Devonshire St., Boston.

Architects and Mill Engineers.
Ferguson, John W., Paterson, N. J.
Gray, Arthur F., Exchange Bldg., Boston.
Green, Samuel M., Holyoke, Mass.
Suck, Adolph, 179 Summer St., Boston.

Attorney-at-Law.
Dawson, H. Horace, 309 Mutual Life Bldg., Philadelphia, Pa.

Automatic Feeds for Cotton and Wool.
Atlas Foundry & Mch. Co., Newark, N. J.
Harwood, Geo. S. & Son, 53 State St., Boston.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Baling Machine.
Torrance Mfg. Co, 18 Davis St, E. Newark, N. J.

Bandings.
See under Yarns.

Bands and Labels.
Docker-Foster Co., Phila., Pa.

Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Belting.
Alexander Bros., 410 No. 3d St., Phila., Pa.
Boston Belting Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Jeffrey Manufacturing Co., Columbus, Ohio.
Main Belting Co, 1219 Carpenter St, Phila.
Popham, Henry, & Son, Newark, New Jersey.
Shultz Belting Co., St. Louis, Mo.
Smith, Jas. Woolen Mach. Co., Phila, Pa.
See also Mill Supplies.

Belt Dressing.
Alexander Bros, 410 No. 3d St, Phila, Pa.
Cling Surface Mfg. Co., 168 Virginia St., Buffalo, N. Y.
Main Belting Co, 1219 Carpenter St, Phila.

Belt Hooks.
Bristol Co., Waterbury, Ct.

Bindings.
See Tapes and Braids.

Bleaching Materials.
Bosson & Lane, Boston.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Block Cutting for Printing.
Atlas Copper Stamp Works, 15 Whitehall St., New York.

Blowers, and Blower Systems.
American Blower Co., Detroit, Mich.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Mass. Fan Co., Waltham, Mass.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.
Sturtevant, B. F. Co., Boston, Mass.

Bobbins, Spools, Shuttles, Etc.
McGuire, John A, Co, Claremont, N. H.
Southern Bobbin Co., Greensboro, N. C.
Sweet & Doyle, Cohoes, N. Y.
Tebbets, E. L., & Co., Locke's Mill, Me.

Boilers.
See Steam Boilers.

Boxes, Cloth Boards, Etc.
Pearson, J. T, Kensington, Pa.

Boxes Paper.
See Paper Boxes.

Braiding Machinery.
New England Butt Co., Providence, R. I.
Textile Machine Works, Reading, Pa.

Braids.
See Tapes, Braids and Edgings.

Brass (Perforated.)
See under Perforated Metal.

Brushes.
Felton, S. A. & Son Co., Manchester, N. H.
Parks & Woolson Mach. Co., Springfield Vt.

Brushers.
See Napping Machines.

Burr Pickers.
Atlas Foundry & Mch. Co., Newark, N. J.
Curtis & Marble Machine Co., Worcester, Mass.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Calico Printers' Machinery and Supplies.
Arlington Machine Works, (Arthur Birch) Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W., Sons & Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.
Taunton New Bedford Copper Co., New Bedford, Mass.
Rusden Machine Co., Warren, R. I.
See also Dyeing, Bleaching Machinery, etc

Canvas Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Carbonizing.
Riverdale Woolen Co., Northbridge, Mass.

Carbonizing Machinery.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts, Phila.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Card Clothing.
Ashworth, Elijah, Fall River, Mass.
Booth, Benj. & Co., Philadelphia.
Edma Card Clothing Co, 422 S. 5th St, Camden, N. J.
Leigh, Evan A, 35 Mason Building, Boston

Card Feeds
See Automatic Feeds.

Card Grinding Machinery.
Hardy Machine Co., Biddeford, Me.
Smith, Jas. Woolen Machinery Co., Phila.

Carders' Tools.
Brown, W. H, Mechanic St, Worcester Mass.

Carpet Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila. Pa.
Curtis & Marble Machine Co, Worcester, Ma.
Granger Foundry & Machine Co., Providence, R. I.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Smith, Jas. Woolen Machinery Co., Phila.

Castings.
American Ferrofix Co., 20 Broad St., N. Y.
Livermore, Homer F., 85 Pearl St., Boston

Chemicals and Apparatus.
Fiedt, Geo. D. & Co, 528 Arch St, Phila, Pa.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Cling Surface.
Cling Surface Mfg. Co., Buffalo, N. Y.

Clocks.
Howard, E. Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.

Riggs & Brothers, 310 Market St. Philadelphia, Pa.

Cloth Boards.
Chaffee Bros., Oxford, Mass.

Cloth Strength Tester.
Burke & Hanford, 621 Broadway, New York.

Clutches.
American Tool & Machine Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., The, New Haven, Conn.
Hunter, James, Machine Co., North Adams, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Combs (Wool and Cotton).
Crabb, William, & Co, Newark, N. J.
Townsend, Thomas, 157 Orange St., Providence, R. I.

Conveying Machinery and Chains.
Jeffrey Manufacturing Co., Columbus, O.
The Sterling Blower & Pipe Mfg. Co., Hartford, Conn.

Cop Tubes.
See Paper Tubes.

Copper Gaskets.
U. S. Mineral Wool Co., 141 Liberty St., New York.

Copper (Perforated.)
See under Perforated Metal.

Copper Print Rollers.
Phillips Co, The Thomas, Providence, R. I.
Taunton-New Bedford Copper Co., New Bedford, Mass.

Copper Work for Dyers.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.

Cotton.
Blaisdell, Jr., Co., S., Chicopee, Mass.
Charles, W. B., Amsterdam, N. Y.

Cotton Bale Ties.
DeHaven Mfg. Co., 50 Columbia Heights, Brooklyn, N. Y.

Cotton Elevators.
Buffalo Forge Co., Buffalo, N. Y.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.

Cotton Machinery.
Altemus, W. W. & Son, 2816 N. 4th St, Phila. Pa.
Ashworth, Elijah, Fall River, Mass.
Atherton, A. T., Machine Co., Pawtucket, R. I.
Barber & Colman, 11 Pemberton Sq., Boston.
Brownell, G. L., Worcester, Mass
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Fairmount Machine Co, 22d and Wood Sts, Philadelphia.
Houghton, L. T., Worcester, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Kitson Machine Co., Lowell, Mass.
Leigh, Evan A, 35 Mason Building, Boston
Lever, Oswald, Lehigh Ave. and Masher St., Philadelphia.
Lowe, Stephen C., 188 Devonshire St., Boston, Agt. John Hetherington & Sons, Ltd.
Lowell Machine Shop. Lowell, Mass.
Mason Machine Works, Taunton, Mass.
McKerrow, H. G, Boston, Mass.
Parks & Woolson Mach. Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Saco & Pettee Machine Shops, Newton, Upper Falls, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas., Woolen Machinery Co., Phila.
Whitin Machinery Wks, Whitinsville, Mass.

Cotton Openers and Lappers.
Atherton, A. T., Machine Co., Pawtucket, R. I.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.

Cotton Softeners.
Bosson & Lane, Boston, Mass.

Cotton Waste.
Becker, C. W. Agt., Amsterdam, N. Y.
Blaisdell, Jr., Co., S., Chicopee, Mass.
Charles, W. B., Amsterdam, N. Y.

Credits.
National Mercantile Agency, New York and Boston.

Cutters for Knit Fabrics.
Goodwin, J. C., Diamond and Second Sts., Phila., Pa.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.

Dating and Time Stamps.
Riggs & Brothers, 310 Market St., Philadelphia, Pa.

Dextrine.
Elwell, Henry A. & Co., Philadelphia, Pa.
Stein, Hirsh & Co, 165 Duane St., New York.

Dryers.
American Blower Co., Detroit.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Hunter, Jas., Machine Co., No. Adams Mass.
Kenyon, D. R. & Son., Raritan, N. J.
Mass. Fan Co., Waltham, Mass.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co., 34 Oliver St., Boston, Mass.

Dusters.
See Wool and Waste Dusters.

Dust Collectors.
Allington & Curtis Mfg. Co., Saginaw, Mich.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.

Dyers, Bleachers and Finishers.
American Yarn Printing Works, 134-136 North 22d St., Philadelphia.
Brophy's, T, Sons, Jasper St, Philadelphia
Cohoes Dye Works, Cohoes, N. Y.
Cranston Worsted Mills (yarns), Bristol, R. I.
Davidson & Brooke, 2560 No. 3rd St., Philadelphia.
Duncan & Baillie, Cohoes, N. Y.
Firth & Foster Co., Kensington, Pa.
Greenwood, R. & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Howard & Co., Rahway, N. J.
Ingrahamville Dye Works, Pawtucket, R. I.
Kagermann, Edward, 1210 Orianna St., Phila.
Lorimers, The Wm. H. & Sons Co., Phila.
Molt Bros., Millbury, Mass. (Indigo Blue.)
Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Pennypack Yarn Finishing Co., Holmesburg Pa.
Pond Lily Co., New Haven, Ct.
Providence Mills Mfg. Co., 55 Girard Ave., Philadelphia, Pa.
Rowland, Samuel, Schuylkill Haven, Pa.
Union Knitting Mills, Schuylkill Haven, Pa.

Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Dyeing, Drying, Bleaching and Finishing Machinery.
American Blower Co., Detroit.
Antisdel, E. M., 12 Miller St., Utica, N. Y., (Knit Dryer.)
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch), Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co Phila Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Delahunty Dyeing Machine Co., Pittston, Pa.
Fairmount Machine Co, 22 and Wood Sts, Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St, Philadelphia, Pa.
Kenyon, D. R. & Son, Raritan, N. J.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Philadelphia Textile Specialty Co., 500 North 12th St., Phila.
Phillips, The Thomas Co, 91-95 South Main St, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)

Dye House Cans.
Hill, James Mfg. Co., Providence, R. I.

Dye Sticks.
Bailey, Frank, Cedar Brook, New Jersey.
Haedrich, E. M., Philadelphia, Pa.

Dyestuffs and Chemicals.
Atteaux, F. E. & Co., 174-176 Purchase St., Boston.
Berlin Aniline Works, 72 Front St., N. Y.
Bischoff, & Co, 88 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Corey, S. J, 273 Congress St, Boston
Cassella Color Co., 182 Front St., New York.
Dilion & Co, 20 Cedar St, New York.
Elwell, Henry A. & Co., Philadelphia, Pa.
Farbenfabriken of Elberfeld Co, 40 Stone St, N. Y.
Ford, J. B. Co., Wyandotte, Mich.
Fortner, L. B., 36 Strawberry St., Phila.
Geisenheimer & Co, 189 Front St, New York.
Holliday & Sons, Ltd., Read, 7 Platt St., New York.
Johnson, Chas. A. & Co, 22 Dey St, N. Y
Keller, John J, & Co, 104-106 Murray St, N. Y.
Klipstein, A, & Co, 122 Pearl St, N. Y.
Koechl, Victor, & Co. 122 Hudson St, N. Y.
Kuttroff, Pickhardt & Co., New York.
Linnehan, J. W. & Co., 185 High St., Boston.
Molt Bros., Millbury, Mass. (Indigo Blue.)
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
Oil Seeds Pressing Co., 15-25 Whitehall St., New York.
Roessler & Hasslacher Chemical Co, 100 William St, New York.
Sharpless Dye Wood Ext. Co, The Bourse, Phila, Pa.
Sykes & Street, 85 Water St, N. Y.
Thayer, Ed. M., 106 Broad St., Boston, Mass.
Vila, H. S., 115 So. 2nd St., Philadelphia, Pa

Dynamos.
General Electric Co., 44 Broad St., New York
Sturtevant, Co., B. F. Boston.

Edgings.
See Tapes, Braids and Edgings.

Electrotyping and Printing.
Whitcomb, H. C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Eastern Machinery Co, The, New Haven Conn.
Jeffrey Manufacturing Co., Columbus, O.
Howard, Geo. C., Lansdowne, Pa and 2123 Market St, Philadelphia, Pa.

Electrical Construction.
General Electric Co., 44 Broad St., New York.

Electric Fans.
American Blower Co., Detroit.
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., 44 Broad St., New York.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa
Sturtevant Co., B. F., Boston.

Electric Lighting.
General Electric Co., 44 Broad St., New York.

Electric Motors.
General Electric Co., 44 Broad St., New York.
Sturtevant Co., B. F., Boston.

Employers Time Recorders.
Riggs & Brothers, 310 Market St., Philadelphia, Pa.

Engine Stop.
Locke Regulator Co., Salem, Mass.

Exhaust Heads.
Burt Manufacturing Co., Akron, Ohio.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
The Sterling Blower & Pipe Mfg, Co., 44 Hupshope St, Hartford, Conn.
Sturtevant, B. F. Co., Boston, Mass.

Fans—Exhaust and Ventilating.
See Ventilating Apparatus.

Feed Water Heaters.
Green Fuel Economizer Co., Matteawan N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feeds.
See Automatic Feeds.

Filters.
Automatic Water Purifying Co, 45 Broadway, N. Y.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Scaife, W. B. & Sons, Pittsburg, Pa.

Finishing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Fluted Rolls.
Cohoes Foundry & Machine Co., Cohoes, N. Y
Thurston, A. G & Son, Box 528, Fall River, Mass.

Forges.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Friction Clutches.
See Clutches.

Friction Hoisting Drums.
Eastern Machinery Co., New Haven, Conn.

Fuel Economizers.
Green Fuel Economizer Co., Matteawan, N. Y.
Steam Boiler Equipment Co., 20 West Houston St., New York

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R. & Son, Raritan, N. J.

Garnetts.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Gas Engines.
Jones, Lewis, 60½ and Media Sts, Phila, Pa.

Gas Exhausters.
Sturtevant Co., B. F., Boston.

Gauges
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.

Gears.
New Process Raw Hide Co., Syracuse, N. Y.

Gear Cutting Machine.
Whiton, The D. E, Co, New London, Conn.

Generating Sets.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Heating.
See Ventilating.
Heddles.
Steel Heddle Mfg. Co., 1842 Germantown Ave., Phila,
Watson, L. S, Mfg. Co, Leicester, Mass.
Hoisting Machinery.
The Eastern Machinery Co., New Haven, Conn.
Hose.
Boston Belting Co., Boston.
Hosiery Labels.
Docker, Foster Co., Philadelphia, Pa.
Saranac Electrical Mfg. Co., St. Joseph, Mich.
Hosiery Boards.
Pearson, J. T, Kensington, Pa.
Humidifying Apparatus.
American Air Moistening Co., Boston.
Hydro Extractors.
American Tool & Machine Co., Boston.
Rusden Machine Co., Warren, R. I.
Ironing Machines for Knit Goods.
Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn.
Jacquard Cards.
Rogers, H. E, South Manchester, Conn.
Knit Goods Edgings, Trimmings, etc.
Cathcart, John & Co., 115 Franklin St., New York.
Chapin, Geo. W. Philadelphia, Pa.
Charles, W, B., Amsterdam, N. Y.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Friedberger Mfg Co, Edgings, Germantown, Phila, Pa.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Krout & Fite Mfg. Co, Allegheny Ave. and Emerald St., Phila.
Weimar Bros, 1817 East York St, Phila. Pa.
Knit Goods Finishing Machines, Crochet, Etc.
Arnold Sewing Machine Co., 216 High St, Newark, N. J.
Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick Co., 606 Arch St, Phila, Pa.
Scott & Williams, 2079 E. Cumberland St, Phila Pa.
Willcox & Gibbs Sewing Mch. Co., New York.
Knitting Machine Cylinders.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford & Holt, Little Falls, N. Y.
Knitting Machinery.
Adams Top Cutting Machine Co., 11 Broadway, N. Y.
American Knitting Machine Co., 6th and Arch St. Philadelphia, Pa.
Antisdel, E. M., 12 Miller St., Utica, N Y.
Babcock Machine Works, Fort Plain, N. Y.
Branson Machine Co., 506 N. American St., Philadelphia.
Brinton, H. & Co., 213 Race St., Philadelphia Pa.
Cooper, Chas, Bennington, Vt.
Crane Mfg. Co, Lakeport, N. H.
Excelsior Knitting Machine Manufacturing Co., Allentown, Pa.
Goodwin, J. C., Second and Diamond Sts., Phila., Pa. (Cutters.)
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y
Keystone Knitting Machine Mfg. Co., 40 N 7th St., Phila.
Lamb Knitting Mach. Mfg. Co., Chicopee Falls, Mass.
Leighton Machine Co, Manchester, N. H.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
McMichael & Wildman Mfg. Co, Norristown, Pa.
Mueller, Arthur, 760 Lexington Avenue., Brooklyn, N. Y.
Nye & Tredick Co., 606 Arch St, Phila, Pa.
Paxton & O'Neill, 127 Bread St, Phila, Pa.
Pepper Mch. Works, Lakeport, N. H.
Ruth & Co., Norristown, Pa.
Scott & Williams, 2079 E. Cumberland St., Phila., Pa.
Snyder, Homer P. Mfg. Co., Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Taylor, James, 835 Arch St., Philadelphia.
Tompkins Bros., Troy, N. Y.
Knitting Needles and Supplies.
Breedon, Wm. & Son, Amsterdam, N. Y.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Crane Mfg. Co, Lakeport, N. H.
Dodge Needle Co., Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Keystone Knitting Machine Mfg. Co., 40 N 7th St., Philadelphia.
Lamb Knitting Machine Mfg. Co., Chicopee Falls, Mass.
Manufacturers' Supplies Co., 66 No. 4th St. Philadelphia.
Mayo Knitting Machine & Needle Co Franklin, N. H.
Page Needle Co, Chicopee Falls, Mass.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co, Lakeport, N. H.
Knotter for Spoolers.
Barber & Colman, 11 Pemberton Sq., Boston
Labeling Machine.
Saranac Electrical Mfg. Co., St. Joseph, Mich.
Laboratory Outfits.
Feidt, Geo. D. & Co, 528 Arch St. Phila, Pa.
Leather.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Leather Boards.
Rogers, H. E, South Manchester, Conn.
Looms.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts. Philadelphia.
Howard, Geo. C., Lansdowne, Pa. and 2128 Market St, Philadelphia, Pa. (For wire.)
Kilburn, Lincoln & Co, Fall River, Mass.
Leigh, Evan A., 35 Mason Bldg., Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Whitin Machine Works, Whitinsville, Mass.
Loopers.
Beattie's Machine Works, Cohoes, N. Y.
Lubricators
Dixon, Jos., Crucible Co, Jersey City, N. J.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Lumber.
Stearns, A. T, Lumber Co, Neponset, Mass.
Lumpers.
Gerry, George, & Son, Athol, Mass.
Machinery Dealers.
Jefferson, Ed, & Bro, 28 Strawberry St., Phila, Pa.
Manhattan Machine Supply Co., 106 Grand St., New York.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Schofield, Geo. L. Phila., Pa.
Taylor, James, 835 Arch St., Philadelphia
Machinists' Tools.
Dodge Mfg. Co., Mishawaka, Ind.
Whiton, The D. E. Co, New London, Conn.
Mails.
Walder, J, Paterson, N. J.
Measuring and Folding Machines.
Curtis & Marble Machine Co, Worcester, Mass.
Elliott & Hall, 544 Hermon St, Worcester Mass.
Parks & Woolson Mach. Co., Springfield Vt.
Mechanical Draft.
American Blower Co., Detroit.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co, Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.
Mechanical Engineers.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Green, Samuel M., Holyoke, Mass.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.

Sturtevant Co., B. F., Boston.
Suck, Adolph, 179 Summer St., Boston.

Mercerizing Machinery.
Butterworth, H. W. & Sons, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Philadelphia Textile Specialty Co., 500 North 12th St., Phila.
Rusden Machine Co., Warren, R. I.

Mill Architects.
See Architects & Mill Engineers.

Mill Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Mill Broker.
Barrow, W. B., 130 N. 12th St., Philadelphia.
Ostrander, W. M., 1452 North American Bldg., Philadelphia.

Mill Brushes.
See Brushes.

Mill Builders and Engineers.
Ferguson, John W, Paterson, N. J.

Mill Sewing Machines.
(See Sewing Machines and Supplies.)

Mill Supplies.
American Supply Co, Providence, R. I.
Bamford & Smith, Pascoag, R. I.
Bristol, The, Co., Waterbury, Conn.
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Chase Pulley Co., Providence, R. I.
Dixon Lubricating Saddle Co., Bristol, R.I
Dodge Mfg. Co., Mishawaka, Ind.
Easton-Burnham Co., Pawtucket, R. I.
Houghton, E. F. & Co., 3rd and Somerset Sts, Phila.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Jeffrey Manufacturing Co., Columbus, O.
Lane, W. T. & Bro., Port Chester, N. Y.
Main Belting Co, 1219 Carpenter St, Phila.
Oil Seeds Pressing Co., 15-25 Whitehall St., New York.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Shaw, Victor, Ring Traveller Co., Providence, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Southern Bobbin Co., Greensboro, N. C.
Steel-Heddle Mfg. Co., 1842 Germantown Ave. Phila.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Sweet & Doyle, Cohoes, N. Y
Thurston, A. G, & Son, Fall River, Mass.
Watson, L. S, Mfg.Co, Leicester, Mass.

Napping Machines.
Columbia Napping Machine Co., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.

Noils (Silk.)
Ryle, Wm. & Co., 54 Howard St., N. Y.
Malcolm Mills Co., Frankford, Pa.

Oil Cups.
New York Lubricating Oil Co., 35 Water St., New York.
Pittsburgh Gage & Supply Co., Pittsburgh Pa.

Oil Filters.
Burt Manufacturing Co., Akron, Ohio.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.

Oils.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
New York Lubricating Oil Co., 35 Water St., New York.
Oil Seeds Pressing Co., 15-25 Whitehall St, New York.

Oilless Bearings.
Arguto Oilless Bearing Co, Wayne Junction, Phila.

Overseaming Machines.
Arnold Sewing Machine Co., 216 High St., Newark, N. J.
Merrow Machine Co., Hartford, Conn.
Union Special Sewing Machine Co., 75 Kinzie St., Chicago, Ill.
Von Buchwald, W. J., 120 No. 7th St., Phila.
Wilcox & Gibbs Sewing Machine Co., New York.

Packing.
Boston Belting Co , Boston.
Jenkins Bros., New York.

Pantagraphs for Mill Engraving.
Johnson, C. A, & Co, 21 Dey St, New York.

Paper Tubes.
Sayford Paper Specialty Co., Camden, N. J.

Patent Soliciters.
Crosby & Gregory, 34 School St, Boston.
Siggers, E. G., Washington, D. C.
Straley, Hasbrouck & Schloeder, 257 Broadway, New York.
Wolhaupter, D. P., Equitable Bldg., Washton, D. C.

Perforated Metals.
Beckley, A. J. & Co., 248 Pearl St., New York.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co., 100 William St, New York.

Picker Sticks.
Southern Bobbin Co., Greensboro, N. C.

Pipe Covering.
Keasbey, R. A, 83 Warren St, New York.

Pneumatic Conveying.
See Ventilating.

Power Transmitting Machinery.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Chase Pulley Co., Providence, R. I.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co, New Haven, Conn.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Howard, Geo. C., Lansdowne, Pa. and 2128 Market St , Philadelphia, Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kilburn, Lincoln & Co, Fall River, Mass.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Rusden Machine Co., Warren, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Saginaw Manufacturing Co., Saginaw, Mich.
Smith, Jas. Woolen Machinery Co., Phila.

Preparatory Machinery, (Cotton).
Atherton, A. T., Mach. Co., Pawtucket, R. I.
Howard & Bullough Am. Machine Co., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.

Press Boards and Fenders.
Rogers, H. E, South Manchester, Conn.

Presses.
Boomer & Boschert Press Co., 338 West Water St., Syracuse, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ma
Hart, Charles, Frankford, Philadelphia.
Howard, Geo C., Lansdowne, Pa and 2128 Market St. Philadelphia, Pa.
Phillips Co. The Thomas, Providence, R. I.
Spencer & Rideout, Nashua, N. H.
(Power, Screw, Hydraulic, Hollow Steam Plate).

Printers (Fabrics and Yarn.)
American Yarn Printing Works, Philadelphia.

Pulleys.
See Power Transmitting Machinery.

Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Rusden Machine Co., Warren, R. I.

Purifying & Filtration Plants.
Scaife, W. B. & Sons, Pittsburg, Pa.

Rag Pickers.
Smith, Jas. Woolen Mach. Co., Phila, Pa.

Raw Hide Gears.
New Process Raw Hide Co, Syracuse, N. Y

Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Walder, J, Paterson, N. J.

Remnants.
Feingold, H. & D., 91 Bedford St., Boston.
Ribbons.
Barton, F. C., 54 Franklin St., New York.
Cheney Bros, S. Manchester, Ct.
Ring Travellers.
DeHaven Mfg. Co., 50 Columbia Heights, Brooklyn, N. Y.
National Ring Traveller Co., Providence, R. I.
Shaw, Victor, Ring Traveller Co., Providence, R. I.
Rope Transmission.
Dodge Mfg. Co., Mishawaka, Ind.
Roving Cans.
Hill, James Mfg. Co., Providence, R. I.
N. E. Ventilating & Heating Co, 980 Manton Ave, Providence, R. I.
Laminar Fibre Co., No. Cambridge, Mass.
Walrus Fibre Mfg. Co., Medford, Mass.
Rubber Covered Rollers and Goods.
Boston Belting Co., Boston.
Rubber Stamps.
Yenlo Co., York, Pa.
Saddles and Stirrups.
Dixon Lubricating Saddle Co., Bristol, R. I
Sample Cards and Mounting.
Rosenberg, Henry, 107 Greene St., N.Y.
Scales
Sweet& Doyle, Cohoes, N. Y.
Scallop Machines.
Merrow Machine Co., Hartford, Conn.
Schools.
International Correspondence Schools, Scranton. Pa.
New Bedford Textile School, New Bedford, Mass.
Lowell Textile School, Lowell, Mass.
Philadelphia Textile School, Phila, Pa.
Screens (Perforated.)
See under Perforated Metal.
Selling Agents.
See Commission Merchants.
Separators.
Draper Co., The, Hopedale, Mass.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Sewing Machines and Supplies.
Arnold Sewing Machine Co., 216 High St,. Newark, N. J.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch), Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Dinsmore Mfg. Co., Salem, Mass.
Fales, L. F., Walpole, Mass.
Kruse & Murphy Mfg. Co., 455 West 26th St., New York.
Manufacturers' Supplies Co., 66 No. 4th St., Philadelphia.
Rusden Machine Co., Warren, R. I.
Union Button Sewing Mch. Co., 164 High St., Boston.
Union Special Sewing Machine Co., 75 Kinzie St., Chicago, Ill.
Von Buchwald, W. J., 120 No. 7th St., Phila.
Wilcox & Gibbs S. M. Co., New York.
Shafting Hangers, Etc.
See Power Transmission Machinery.
Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.
Shell Rolls.
Cohoes Foundry & Mach. Co. Cohoes, N. Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.
Shoddies.
See Wool Shoddies.
Shuttles.
See Bobbins, Spools, Shuttles, Etc.
Shuttle Checks.
Victor Shuttle Check Co., Auburn, N. Y.
Silk Machinery.
Butterworth, H. W. Sons Co, Philadelphia.
Granger Foundry & Machine Co., Providence. R. I.
Mason Machine Works, Taunton, Mass.
Rusden Machine Co., Warren. R. I.
Singe Plates.
Butterworth, H. W. Sons Co., Philadelphia.
Taunton-New Bedford Copper Co., New Bedford, Mass.
Singeing Machines.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch). Somerville. Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ms.
Granger Foundry & Machine Co., Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sizing, Starch and Gums.
Arabol Mfg. Co., 155 William St., New York.
Elwell, Henry A. & Co., Philadelphia, Pa.
O. K. Soap Co., 968 Franklin St., Phila.
Stein, Hirsch & Co, 165 Duane St, New York.
Slashers.
Cohoes Foundry & Machine Co. Cohoes, N. Y
Lowell Machine Shop, Lowell, Mass.
Phillips The Thomas, Co., Providence, R. I.
Smoke Prevention.
Steam Boiler Equipment Co., 20 West Houston St , New York.
Soaps.
Elwell, Henry A. & Co., Philadelphia, Pa.
India Alkali Works, Boston, Mass.
O. K. Soap Co., 968 Franklin St., Phila.
Spindles.
Bamford & Smith, Pascoag, R. I.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Ward & Vandergrift, Elmer, N. J.
Whitin Machine Wks, Whitinsville, Mass.
Spindle Tubes.
Bamford & Smith, Pascoag, R. I.
Spinning Cylinders.
N. E. Ventilating & Heating Co, 980 Manton Ave, Providence, R. I.
Spinning Frames.
See Cotton Machinery.
Spinning Rings.
Draper Company, Hopedale, Mass
Whitinsville Spinning Ring Co, Whitinsville, Mass.
Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.
Spools. *See Bobbins, Spools Shuttles, Etc.*
Spooler Knotter.
Barber & Colman, 11 Pemberton Sq., Boston.
Stamps for Hosiery.
Atlas Copper Stamp Works, 15 Whitehall St., N. Y.
Wells, Wilfred, 805 W. Lehigh Ave., Phila.
Yenlo Co., York, Pa.
Steam Boilers.
Babcock & Wilcox Co., The, 29 Cortland St., New York City.
Brown, C. H, & Co, Fitchburg, Mass.
Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.
Steam Engines.
American Blower Co., Detroit, Mich.
Brown, C. H, & Co, Fitchburg, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hooven (The), Owens & Rentschler Co Hamilton, O.
Rusden Machine Co., Warren, R. I.
Sturtevant, B. F. & Co., Boston.
Steam Surface Coverings.
Keasbey, Robert A., New York.
Steam Specialties.
Butterworth, H. W. Sons Co., Philadelphia.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Jenkins Bros., New York.
Locke Regulator Co., Salem, Mass.
New York Lubricating Oil Co., 35 Water St., New York.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Rusden Machine Co., Warren, R. I.
Steam Boiler Equipment Co., 20 West Houston St., New York.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Sturtevant Co., B. F., Boston.

Steam Valves.
Jenkins Bros., New York.
Stop Motion for Looms.
See, Warp Stop Motions.
Tanks, Tubs and Vats.
Davis, G. M. & Son, Palatka, Fla.
Cypress Lumber Co, Apalachicola, Fla.
Lewis, H. F. & Co., New Orleans, La.
Rusden Machine Co., Warren, R. I.
Stearns, A. T. Lumber Co, Neponset, Mass.
Stevens, D. B. & Co., Auburn, Me.
Woolford, George, 2340 No. 9th St, Phila, Pa.
Tapes, Braids and Edgings.
Barton, F. C., 54 Franklin St., New York.
Cathcart, John, & Co, 115 Franklin St, N. Y
Chapin, Geo. W Philadelphia Pa.
Friedberger Mfg. Co, Germantown, Pa.
Hamilton, J. H. & Co., 84 Franklin St., N. Y.
Krout & Fite Mfg. Co., Allegheny Ave. and Emerald St., Philadelphia.
Weimar Bros, 1817 East York St, Phila, Pa.
Temples.
Draper Co., Hopedale, Mass.
Tension Pulleys.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
N. E. Ventilating & Heating Co, 280 Manton Ave, Providence, R. I.
Tentering Machines.
See Dyeing, Bleaching Machinery, Etc.
Tenter Clips.
See Dyeing, Drying, Bleaching and Finishing Machinery.
Testing Machines.
Burke & Hanford, 621 Broadway, New York.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.
Textile Schools.
See Schools.
Thread Board for Spinning & Twisting Frames.
Houghton, L. T. Worcester, Mass.
Thread Protectors.
Ring Frame Thread Protector Co., The, Amsterdam, N. Y.
Tickets and Labels.
Saranac Electrical Mfg. Co., St. Joseph, Mich.
Tower Clocks.
Howard E. Clock Co., 403 Washington St., Boston; 41 Maiden Lane, New York.
Trucks.
Slingsby H. C., 253 Broadway, New York.
Turbine Governors.
Replogle Governor Works, Akron, O.
Turbines.
(See Water Wheels.)
Twine Machinery.
Brownell, G. L, Worcester, Mass.
Twisting Machinery.
Brownell, G L., Worcester, Mass.
Valves.
Boston Belting Co., Boston, Mass.
Locke Regulator Co., Salem, Mass.
Ventilating Apparatus.
Allington & Curtis Mfg. Co., Saginaw, Mich., 81 Wareham St., Boston.
American Air Moistening Co., Boston
American Blower Co., Detroit, Mich.
Berry, A. Hun, 23 W. 1st St, Boston, Mass.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Manhattan Machine Supply Co., 106 Grand St., New York.
Massachusetts Fan Co., Waltham, Mass.
New England Ventilating & Heating Co, Providence. R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.
Warp Stop Motions.
Draper Co., Hopedale, Mass.
Washers (Cloth).
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville Mass
Butterworth, H. W. & Sons Co., Philadel.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass
Kenyon, D. R., & Son, Raritan, N. J.
Phillips Co, The Thomas, Providence, R. I.
Rusden Machine Co , Warren, R. I.
Washing Soda.
Ford, J. B. Co., Wyandotte, Mich.
Watchman's Clocks.
Eco Magneto Clock Co, 620 Atlantic Ave, Boston.
Howard, E. Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Nanz & Co, 127 Duane St., New York.
Pettes & Randall, 150 Nassau St., New York
Riggs & Brothers, 310 Market St., Philadelphia, Pa.
Water Purifiers & Filters.
Automatic Water Purifying Co., 45 Broadway, N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.
Water Wheels.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.
Water Wheel Governors.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Leffel, James & Co, Springfield, Ohio.
Replogle Governor Works, Akron, O.
Winders. (Back.)
Taylor, Jas., 835 Arch St., Philadelphia.
Winder Bobbins.
Sweet & Doyle, Cohoes, N. Y.
Winders. (Hosiery.)
Altemus, Jacob K., Philadelphia.
Foster Machine Co., Westfield, Mass.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia.
Snyder, Homer P. Mfg. Co., Little Falls, N. Y.
Universal Winding Co, 95 South Street, Boston.
Wood Pulleys.
Chase Pulley Co., Providence, R. I.
Dodge Mfg. Co., Mishawaka, Ind.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Saginaw Manufacturing Co, Saginaw, Mich.
Wool Cleaning Compound.
Ford, J. B. Co., Wyandotte, Mich.
India Alkali Works, Boston.
Wool Combing Machinery.
Leigh, Evan A. 35 Mason Bldg., Boston.
Wool and Waste Dusters.
Atlas Foundry and Mch. Co., Newark, N. J.
Gerry, Geo. & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Woolen and Worsted Machinery.
Altemus, Jacob K., 2816 N. 4th St, Phila, Pa.
American Tool and Machine Co., Boston.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Arlington Mch. Works (Arthur Birch), Arlington Heights, Mass.
Atlas Foundry and Mch Wks., Newark, N.J.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Fales, L. F , Walpole, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila., Pa.
Harwood, Geo. S. & Son, 53 State St., Boston.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co. No. Adams, Mass.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Kensington Machine Works, Mascher St., below Lehigh Ave., Phila.
Kenyon D. R. & Son, Raritan, N. J.
Leigh, Evan A. 35 Mason Bldg, Boston.
Lever, Oswald, Lehigh Ave. and Maseher St., Philadelphia, Pa.
Lowe, Stephen C., 186 Devonshire St., Boston. Agt. John Hetherington & Sons, Ltd.
Parks & Woolson Machine Co., Springfield, Vt.

Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Philadelphia.
Phillips Co, The Thomas, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.

Wool Oiling Apparatus.
Harwood, Geo. S. & Son, 53 State St., Boston.

Wool Shoddies.
Becker, C. W., Agt., Amsterdam, N. Y.
Riverdale Woolen Co., Northbridge, Mass.
Slack, Wm. H. H., & Bro, Springfield, Vt.

Wool Washing, Preparing and Drying Machinery.
Hunter, Jas., Machine Co., No. Adams, Mass.
Phillips Co, The Thomas, Providence, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Sargent's, C. G, Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

YARN, THREADS, ETC.

Banding.
Moore, C. & Co. 12 S. 5th St, Phila, Pa.
Tucker & Cook Mfg. Co, Conway, Mass.
Toohey, M. J. & Co., Fall River, Mass.
Whittier Mills, Chattahoochee, Ga , Treasurer's Office, Springfield, Mass.

Cotton Yarns.
American Cotton Yarn Exchange, 67 Chauncy St., Boston.
Ballou Yarn Co., Providence, R. I.
Blythe, Richard A., 114 Chestnut St., Phila.
Buckingham Paulson Co., 83 Leonard St. New York.
Catlin & Co, New York and Boston.
Charles, W. B., Amsterdam, N. Y.
Dana Warp Mills, Westbrook, Me.
Dexter Yarn Co., Pawtucket, R. I.
Dodds, J. S., 517 Wool Exchange, New York.
Eddy & Street, Providence, R. I.
Spring St., N. Y.
Eichmann & Sternberg, New York.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Indian Orchard Co., Indian Orchard, Mass.
Jenckes, E., Mig. Co., Pawtucket, R. I.
Mitchell, Jas. E. & Co, Boston and Phila, Pa.
Moeller & Littauer, 109 Greene St , New York.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
Morgan, E. A., 54 Franklin St., N. Y.
Orswell Mills, Fitchburg, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Mills, Chattaeoochee, Ga., Treas-Office, Springfield, Mass.

Cotton Yarns Wool Spun.
Broadbent, J. & Sons, Unionville, Conn.

Flax. Hemp. Jute and Ramie.
Fawcett, Hughes, 115 Franklin St., N. Y
Eichmann & Sternberg, 530 Broadway, N. Y.
Morgan, E. A., 54 Franklin St., N. Y.

Gassed Yarns.
Ballou Yarn Co., Providence, R. I.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, New York.
Greene & Daniels Mfg. Co, Pawtucket, R. I.

Glazed Yarns.
Ballou Yarn Co., Providence. R. I.
Blythe, Richard A., 114 Chestnut St., Phila.
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimers, Wm. H. & Sons Co., Philadelphia.
Malcolm Mills Co, Frankford, Pa.
Orswell Mills, Fitchburg, Mass.
Rockwell, E. M, Leominster, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y
Skerry, A T, & Co, 47 Leonard St, N. Y.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co. N. Y.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Harness Twine.
Ballou Yarn Co., Providence, R. I.
Cranston Worsted Mills, Bristol, R. I.
Eichmann & Sternberg, 530 Broadway, N. Y.
Fawcett, Hughes, 115 Franklin St., N. Y.
Moore, C., & Co., (S. W. cor. 5th and Market Sts.)
Morgan, E. A., 54 Franklin St., N. Y.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Hosiery and Knitting Yarns.
Blythe, Richard A., 114 Chestnut St., Phila
Boyer, B. F. Co., Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Cranston Worsted Mills, Bristol, R. I.
Dexter Yarn Co., Pawtucket, R. I.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Herbst, Albert & Co., E. Allegheny Ave., Philadelphia.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E., Manufacturing Co, Pawtucket, R. I.
Mitchell, James E, & Co, Phila. and Boston
Monument Mills, Housatonic Mass.
Moeller & Littauer, 109 Greene St., New York.
Queensbury Mills, Worcester, Mass.
Skerry, A. T, & Co., 47 Leonard St., N. Y.

Mercerized Yarns.
Blythe, Richard A., 114 Chestnut St., Phila.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, 530 Broadway, N. Y.
Harper, E. J., 395 Broadway, New York.
Indian Orchard Co., Indian Orchard, Mass.
Lorimer, Wm. H. & Sons Co., Philadelphia.
Montgomery, J. R. & Co., Windsor Locks. Conn.
Morgan, E. A., 54 Franklin St., N. Y.
Pennypack Yarn Finisning Co., Holmesburg, Pa.

Mohair Yarns.
Cranston Worsted Mills, Bristol, R. I.
Montgomery & Co, J. R, Windsor Locks. Ct.
Morgan, E. A., 54 Franklin St., N. Y.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Novelty Yarns, Tinsels, Silk Noils, Etc.
Cranston Worsted Mills, Bristol, R. I
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Malcolm Mills Co, 229 Chestnut St, Phila, Pa.
Moeller & Littauer, 109 Greene St., New York.
Montgomery & Co, J. R, Windsor Locks, Ct.
Skerry, A. T, & Co, 47 Leonard, St, N. Y.

Silk Yarns.
Cheney Bros, S. Manchester and Hartford Ct.
Eddy & Street, Providence, R. I.
Eichmann & Sternberg, 530 Broadway, N Y.
Moeller & Littauer, 109 Greene St., New York.
Ryle, Wm, & Co, 54 Howard St, N. Y.

Woolen and Merino Yarns.
Boyer, B. F. Co., Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Eaton Rapids Woolen Mills, Eaton Rapids, Mich.
Eddy & Street, Providence, R. I.
Harper, E. J., 395 Broadway, New York.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
Moeller & Littauer, 109 Greene St., New York.
Rockwell, E. M, Leominster, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Speed, James, 170 Summer St , Boston.

Worsted Yarns.
Alleghany Worsted Mills, Phila, Pa.
Boyer, B. F, Co, Camden, N. J.

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Must understand all details of manufacturing men's and women's high grade underwear, both ribbed and flat. In writing for an interview state experience and salary expected. Strictly confidential. Address A. B. Knitting Mills, care Textile World.

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A man who fully understands the running and taking care of Lamb Knitting and Kindred Machines, one who has some executive ability. State experience and salary expected. "Kindred," care of Textile World.

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COTTON SUPERINTENDENTS.

1337 **Assistant Supt.**, experienced in the manufacture of bookbinders' cloth, window shades, etc., is open to a position. English; 45 years of age; married. Prefers South. Best of references.

1853 **Supt Cotton Mill.** or would take an overseer's position in a large mill North for the present. Has been assistant superintendent for past year, previous to which he was overseer of carding for nine years, and before that was overseer of carding and spinning in the South. First-class references. Can take position at once. Colored and white goods. English and American machinery.

189 **Cotton Superintendent** wants position in Northern mill. Has been in charge of Southern mills for 7 years. Previous experience in N. E. Is well known among mill men, and can furnish the best of references. Age 35; married.

1877 **Agent or Treasurer.** Good references. Recently assistant manager of a large mill. Fully competent.

2021 **Supt., Overseer of Carding,** assistant designer. Worked on sheetings and ginghams. Held position of overseer of carding and assistant to manager for past few years. Age 41; American. First class references.

2005 **Superintendent** of mill on plain cotton goods. Age 40; English; married. Some knowledge of designing. Has worked in a repair shop. Fair salary.

1532 **Supt.** of cotton mill, a thoroughly capable man, is open to a position. Well up on English and American makes of machinery. Has manufactured yarns both in American and Egyptian cottons, from 17s to 70s. About 40 years of age; Scotch. Has held a responsible position in a New England company for the past 10 years.

1806 **Wanted.** A position as supt. by an up-to-date man full of push and energy. A hustler and a good manager. Anyone needing a man to manage their mill will do well to correspond with him. Is up in woolen manufacture of flannels, blankets and jeans; in cotton of drills, sheetings, shirtings and cotton or jute bagging. Wages from $3 to $4 per day and house rent free. Has had long experience on above goods, especially in weaving.

1975 **A Linen Manufacturer,** who thoroughly understands linen and cotton fancy goods and damasks, is open to position as Supt. 40 years of age, Irish, married. Can refer to well known mill owners. Terms reasonable.

1938 **Supt.** or Supt. and Designer. Age 33; Scotch; married. Fine and plain fancy ginghams, shirtings, fine sheer fabrics, cotton and worsted dress goods, plain and Jacquard silks and Jacquard bed quilts, also print cloths. Crompton & Knowles looms. All kinds of winding, beaming, warping and quilting machinery, also finishing. At present studying picking, carding and spinning machinery.

2011 **Wanted,** a position as assistant superintendent of a fancy weaving mill, by a man having a thorough practical knowledge of weaving and designing. Age 32; married.

WOOLEN SUPERINTENDENTS.

1841 **Superintendent.** Was eight years in every department and acted as assistant in England. Wants to get a start in this country. Would take position as assistant superintendent, designer, or assistant designer. Has had experience on high grades of plain and fancy woolens and worsteds, as well as army kerseys and cotton worsteds.

1930 **Asst. Supt.**, woolen or worsted, or overseer of twisting, spooling, dressing. Age 40; American; married. Is familiar with English and American machinery. Excellent references.

1974 **Asst. Supt.** or Designer, woolen or worsted, who understands designing and also the work of every department. Has worked on fine worsteds, coverts, cheviots kerseys, meltons and fancy cassimeres. Technical education acquired at Phila. Textile School. Six years' practical experience, three as designer. Age 24, American, good references. Will go anywhere.

1936 **Supt. or Designer,** an American, married. 38 years of age, is desirous of obtaining a position. Understands the manufacture of worsteds, cotton worsteds, cassimeres, meltons—steam face, flannels, and horse and bed blankets. Long experience and up-to-date in methods. Moderate wage.

1976 **Manager and Buyer,** blankets, rugs and government cloths. Young Englishman, 30, managing a plant of 19 sets cards and 200 looms in England, desires similar position in the States. Thoroughly practical in every department. Salary according to results.

1982 **Supt.** of large experience in the manufacture of woolen and worsted fancies and suitings, is open to an engagement as supt. or designer. Age 45; American; married. Good references.

1983 **Supt. and Designer** of woolen and worsted dress goods or men's wear, is open to a position. 42 years old; American citizen of German extraction. Familiar with jacquard work as well as dobby. Good references.

1829 **Woolen Supt.**, or asst. or dyer. Age 35; American; married. Has worked on kerseys, coverts, worsteds, cassimeres and fancy cottons, etc. Is familiar with Davis & Furber jacks and mules, and Crompton & Knowles.

1890 **Manager or Supt.** of a woolen mill, who understands designing, is open to an engagement. 34 years old; Scotch, and single. Large experience in Scotch and Canadian mills on tweeds, worsteds, overcoatings, etc. Good references.

1891 **Supt. of Woolen or Worsted** Mill, who understands designing, is open to a position. 23 years of age; an American; single. Well recommended, and with good experience.

1537 **Woolen Superintendent, Designer or Weaver.** Has worked on all classes of woolens, worsteds, cotton worsteds, fancy cassimeres, etc., and is acquainted with all Eastern makes of machinery. American. Age 34; married.

WOOLEN CARDERS.

1953 **Boss Woolen Carder,** experienced on all classes of wool, all cotton, wool and cotton, and shoddy mixes, desires a position. Is an American; married; 40 years old. Leaving present position on account of shutdown. Is steady, reliable, and can give good references from last employers. Three workers in family.

1617 **Boss Carder or Second Hand.** Has held several first class jobs also has had experience in spinning. Can accept position at once. All grades of stock, including shoddies, and cotton and wool and all wool.

2000 **Secondhand Carder** familiar with all wool, wool and cotton and shoddy mixes on Davis & Furber and Furbush cards would like to obtain a position. 21 years old, American. Good references.

1944 **Carder,** or carder and spinner. Age 48; married; American. Has worked on all kinds of woolens, and of late on shoddy and cotton mixes. Is familiar with Davis & Furber machines. Excellent reference from past employer.

1903 **Boss Carder,** woolen or worsted mill, desires a position. Experienced on fine and coarse work; 27 years of age; American; married. Can refer to responsible parties. Moderate wages desired. Will go to any part of United States.

COTTON CARDERS.

1968 **Overseer** of cotton carding and combing, who understands setting up and starting new machinery, is open to a position. 33 years old, English, married. Is especially good on fine combed Egyptian and Sea Island yarns. Best of references. Moderate wage.

1919 **Overseer Cotton Carding and** Spinning, who has had an experience of over 10 years in N. E. and New York mills, is open to a position. 26 years old; American; single. Thoroughly competent and reliable. Best of references.

1932 **Overseer of Carding** or would take assistant superintendent position. Age 27; American; single. Carded and combed American, Egyptian and Sea Island Cotton, making yarns from 8s to 100s; both plain and colored goods. Can come at once.

1718 **Overseer of Card Room** desires a position in cotton mill. About 26 years of age, steady and strictly temperate. Has been six years second hand and two years overseer. Best of references.

1991 **Secondhand Comber** or Carder who is at present handling 75 cards and eight combs, is open to a position. 30 years old, French, married. Is familiar with all well known makes of machinery. Good references. Terms reasonable.

2001 **Overseer of Carding** who has had experience in some very large cotton mills in Massachusetts wishes to obtain a position. Understands the running of both coarse and fine goods and is familiar with all makes of cards. 41 years of age; American; married. Good references. Moderate wages.

2022 **Overseer of Carding.** Age 47; American; married. Worked on both wool and cotton. Is familiar with Davis & Furber and James Smith machinery.

WOOLEN SPINNERS.

1927 **Overseer Spinning,** carding or flyers. 37 years old; married, and can furnish best of references. Twenty-three years' experience. A German.

1969 **Overseer** of woolen spinning would like a position in a good mill. Has worked on woolen, cotton mixes, and shoddies from 1 to 3Rs. 26 years of age temperate and steady. Good references.

1987 **Overseer** of woolen spinning desires to make a change. Is familiar with suiting, union, cassimere, satinet and knitting yarns and all ordinary makes of machinery. 30 years of age; American; married. Good references as to character and ability.

1956 **Overseer Woolen Spinning,** 34 years old, American, married, desires position. Understands Johnson & Bassett, Davis & Furber, Cleveland Bros. and Woonsocket mules; and has made all wool, merino and shoudy mixes. Can give good references.

1941 **Boss Spinner.** Wants $3.50 or more. One daughter a spooler and twister. Excellent references. Is familiar with Davis & Furber, Johnson & Bassett, and other makes of machinery.

COTTON SPINNERS.

1960 **Overseer of Cone Winding** and spooling or ring spinning, who understands Universal Foster, Broadbent and Payne winders, and Whitin and Mason frames, desires a position. Has worked on carded and combed yarns from 4s to 160s; also, mercerized, gassed and bleached yarns from 2 to 8 ply. Young man; American; married, and can give satisfactory references from large mills.

1950 **Overseer** or second-hand of cotton mule spinning desires a position in the Southern States at reasonable wages. Is a good fixer and has made yarns ranging from 4s to 40s. 39 years old; German; married. Best of references. One worker in family—drawer in.

2009 **Overseer Ring Spinning,** spooling and warping. Might accept a good secondhand job. Age 43; American; married. Ten years' experience as secondhand, and last six years been overseer. Worked on white work from 4s to 34s.

2020 **Overseer of Ring Spinning** or asst. supt. Age 29; English; unmarried. Is familiar with all grades of cotton. Good experience and excellent references.

2003 **Overseer of Mule Spinning** who has had a wide experience in large New England mills on yarns ranging from 24s to 160s is open to a position. 37 years old; American. Good references.

1690 **Cotton Mule Spinner.** Age 42; French; married. Has worked on prints and sheetings and on yarns from 9's to 50's. First class references. Two years' experience as secondhand and five as overseer. Wants $2.50 per day to start with.

1519 **Overseer Spinning.** Age 31; American; married. Has worked on yarns from one run to 5¼. Will accept an average salary. At present employed, but wishes to better himself.

WOOLEN WEAVERS.

1959 **Boss Weaver**, who is familiar with cotton, woolen and worsted looms, and all classes of goods, is open to a position in a large mill. 46 years of age; American; married. Strictly temperate and is recommended by some very large N. E. woolen and cotton mills.

1964 **Boss Weaver**, familiar with all makes of woolen and worsted machinery, and who has worked on ladies' dress goods and men's wear, desires a position. 39 years of age; American; married. Can give good references.

1949 **Boss Weaver**, capable of taking entire charge of a small woolen mill, will be open to a position in a few weeks. 44 years old; American; married. Familiar with all classes of woolen and worsted goods. Good references. Three workers in family.

2019 **Boss Weaver** or assistant designer. Wants position with a firm who is willing to advance a man as he proves himself worthy. 28 years old; married, and a steady worker. For past six years worked in all parts of the weave room and pattern room, pattern weaving and dressing, chain building, harness raising, perching, fixing and regular weaving. Now taking course of study in woolen and worsted designing. Excellent reference.

2008 **Overseer of woolen** or worsted weaving. Would consider second hand or good fixing job. Age 37; married; American. Wants N. E. States. Worked on all classes of woolen and worsted goods, including paper makers' felts. All kinds of harness looms.

COTTON WEAVERS.

1992 **Boss Weaver** who also understands the management of drawing-in, pattern and slasher rooms, is open to a position. Is familiar with all ordinary makes of cotton looms and has handled ginghams, Shirtings, dress goods, etc. 36 years old, American, married. Good References

1985 **Overseer** of cotton weaving, thoroughly familiar with the weaving of cotton duck, sheetings, drills, twills, stripes, osnaburgs, and all plain goods is open to a position. Understands Lowell, Crompton & Knowles, Draper, Lewiston, Whitin, Bridesburg, English and Clipper looms, and several other makes. 34 years of age, American, married. Terms reasonable. Good references.

2016 **Overseer of Weaving.** Age 35; Scotch; married. Good experience, and excellent references. Crompton, Whitin, Lowell, Colvin, Woonsocket and English looms. Sheetings, lawns, ginghams, flannels, fine worsteds, dress goods, shirtings and novelty goods.

2006 **Overseer of Weaving**, drawing and slashing. All classes of cotton goods and machinery. Age 49; married. Good experience.

1998 **Boss Weaver** at present handling about 1,000 looms on fancy and plain goods, wishes to obtain a position. Familiar with Stafford and Crompton heads, Mason Kilburn, Lincoln, and Whitin looms. 39 years old; English; married; 3 weavers in family. Good references.

KNITTERS.

1943 **Fixer or Foreman.** Age 27; American; married. Has had five years' experience on knitting machines, including Standard B and C machines, can handle new Victor machines, also sewing machines. Wants to change on account of location.

1945 **Asst. Supt.**, or overseer of a large stitching department in knit underwear mill. Willcox & Gibbs sewing machines, Union Special and loopers.

1951 **Overseer** of cuff knitting, who thoroughly understands fixing Tiffany and Cooper machines, wishes position. 45 years of age; English; married. Good references.

1939 **Boss Knitter.** Age 42; English descent; married. Has one girl who is a winder. 11 years as foreman knitter in one mill, and for the past seven years in full charge of knitting and winding in a mill, but wants to change on account of locality. Campbell & Clute, Tompkins and Crane machines. Balbriggan underwear, fleece lined and two-thread work, also fancies. Worked mostly on woolen goods.

1906 **Supt. or Agent** of a hosiery mill is open to a position. Thoroughly understands spinning, dyeing and is familiar with all well-known makes of knitting machinery. American; 28 years old; single. Has been superintendent for the last seven years in a large plant. Best of references.

1993 **Boss Knitter and Fixer** on ladies' and gents' ribbed underwear on S. & W., N. & T., M. & W., B. & D., S. & H., Muse, Champion, S. & F. machines is open to a position in any part of the United States. 30 years old; American; married. Good references. Wants $4.

1657 **Superintendent or Foreman** of seamless hosiery familiar with cotton and woolen goods on Scott & Williams, Electric, Acme, Standard and several other makes, ribbers, loopers, sewing machines, etc., is open to a position. 40 years old; American; married. Best of references.

1951 **Cuff Knitter and Fixer.** Wants a place where he will have steady work.

2007 **Supt or Mill Manager.** Age 27; single. Is practical in any department. Able to adjust loopers, ribbers, etc. From shipping clerk has had charge in turn, pressing and drying, looping, paring and packing departments. Has hired labor, made up new lines and bought some of the stock. Is familiar with office work.

2018 **Foreman** or fixer of a knitting mill making golf goods, sweaters, cardigan jackets, caps, petticoats and other kindred goods. Age 31; German; married

1961 **Supt. or Manager** of large hosiery yarn mill will be open to a position shortly. American; married. Has manufactured in the South hosiery yarns in natural state, mixtures, silver grays, bleached and colored. Can refer to influential men.

Manager or Superintendent.

Wanted by a practical man on both hosiery and underwear, a position in the South, North Carolina preferred. At present am manager of an A1 underwear mill in the North, but compelled to resign on account of the severity of climate. Address, "Supt.," care of Textile World, Boston.

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BOSTON, MASS., U.S.A.

DESIGNERS.

1996 **Designer or Assistant Superintendent** desires a position. 27 years old; Scotch: married. Familiar with all well known makes of machinery and with woolen, worsted and cotton goods. Good references. Will go to any part of the United States. Terms reasonable.

1997 **A Young Man,** 23 years of age, English, would like a position as assistant designer or boss weaver. Has worked on woolen dress goods, cloakings, suitings and worsted suitings. Good references. Moderate wages. Three weavers in family.

1117 **Designer, Boss Weaver** or Superintendent, familiar with fancy cassimeres, fancy worsteds, dress goods, golf goods, plaid backs, coverts, shoe cloth, unions, etc., is desirous of obtaining a position. 40 years of age; American; married. Best of references. Terms moderate.

1962 **Designer,** boss weaver, or both, desires a position in a woolen or worsted mill. Is at present employed as designer and boss weaver on worsted and woolen dress goods and suitings, and giving satisfaction. 30 years old; Swede; married. Expects moderate salary. Will go to any part of the United States. References from well-known textile men.

1923 **Assistant Designer** on woolen or worsted dress goods and suitings is open to a position. Age 21; American; single. A graduate of one of the largest textile schools in the country, and has had experience in a good New England mill. Also understands flannels and satinets. Good references.

DYERS.

1972 **Boss Dyer** of large experience on cotton, cotton and wool, shoddy waste, camel hair raw stocks; all wool flannels, ladies' dress goods, worsteds, friezes and Union piece dyes; and skein dyeing, hosiery, etc., is open to a position in a woolen, worsted or hosiery mill. 50 years of age, English (naturalized), married. Best of references. Terms moderate.

1995 **Boss Dyer** who has been 12 years in a large Connecticut woolen mill is open to a position with any good concern. 40 years old; American; married. Piece dyes, yarns, mohair, wool stock, indigo vats, fancy shoddies and raw cotton. 17 years' experience. Good references. Terms moderate.

1979 **A Boss Dyer,** who has been assistant dyer in one of the largest mills in the United States for the last ten years, is desirous of making a change. Is familiar with wool slubbing, worsted yarn, and pieces; cotton raw stock, skein and warp yarn, pieces, and also Union goods. Understands all modern dyeing machinery. Best of references. Salary moderate.

1966 **A Color Mixer,** chemist or cotton piece dyer is open to a position English; 30 years old; married. Was assistant manager of large print works in England for three years, and can refer to well-known men. Terms moderate.

2013 **Superintendent** of dyeing and finishing, or assistant manager of a woolen mill where dyeing and finishing is done. Can design. Age 41; English; unmarried. Worked on all classes of woolen and worsted goods, cotton linings, cotton velvets and plushes. To secure permanent position is willing to start for small salary.

FINISHERS.

2004 **A Boss Finisher** of over 25 years' experience on fancy cassimeres, worsteds, dress goods, serges and a large variety of steam finished goods, beavers, kerseys, cloakings, meltons, cheviots, etc., is open to a position. 44 years old; American; married. Good references. Moderate terms.

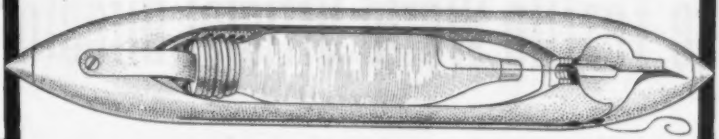
1990 **A Foreman** in Finishing room on all kinds of cotton piece goods. Accustomed to all kinds of folding, packing, etc., and machinery used therein. English, married, age 36. Five years in last situation. Has been in this country 12 years. Can give references from present and past employers.

1958 **Boss Finisher** of underwear, cotton or wool mixed goods, who understands Wheeler & Wilson buttonhole machines, Union Button, Union Special, etc., is open to a position in the New England or Middle States. 30 years; American; married. Been employed for a number of years by concern for whom he is now working. Exceptionally good references.

1921 **Boss Finisher** of a satinet mill or secondhand of a woolen mill, would like a position. Has held these positions in good sized mills, and is familiar with satinets and woolens. 23 years of age; American; single. Good references as to steadiness, reliability and quality of work.

1970 **A good Second-hand Finisher** who thoroughly understands Union cassimeres, meltons and satinets, would like a position. 30 years of age, American, married. Well up on all well-known makes of machinery, and capable of taking a boss job. Good references. Reasonable wages expected.

Are You a Shuttle?



Think. Are you always going—shuttle-like—but not advancing? We can train you to advance. We have trained hundreds in your line of work for better salaries and positions, and we can do the same for you. Let us try it. Mark **X** in the coupon before the position you want, cut it out, and send to us with your name, address, and occupation. By return mail, we will explain our method of training. Don't delay.

International Correspondence Schools,
Box 860, Scranton, Pa.

Please explain how I can qualify for the position marked **X** below.

Cotton Mill Supt.	Woolen Designer	Elec. Engineer	Chemist
Boss Cot'n Carder	Cotton Designer	Electrician	Navigator
Boss Cot'n Spinner	Mech. Engineer	Steam Engineer	Bookkeeper
Boss Cot'n Weaver	Mech. Draftsman	Marine Engineer	Stenographer
Woolen Mill Supt.	Machine Designer	Civil Engineer	To Speak French
Boss Wool. Carder	Mech. Draftsman	Surveyor	To Speak German
Boss Wool. Weaver	Foreman Machin't	Architect	To Speak Spanish

Send in the Coupon Today

MISCELLANEOUS.

1994 **Wanted** a postion in either mill or selling office of a textile manufacturing business by an American of extensive pr ctical and theoretical knowledge in all textile brauches, well versed in German and French. Age 28 years. Can furnish best of references.

1988 **A Young Man**, 23 years of age; American; who has had 18 months' experience in a woolen mill and is at present a student in a textile school, is willing to begin at the bottom of the ladder with a good mill where there is prospect of advancement. Small pay to start. Good references.

1980 **An Expert** on soap making and wool scouring will be open to a position shortly. Is familiar with the treatment of all grades. About 40 years old. English; married. Has worked for one concern in the United States for 12 years.

1981 **Master Mechanic;** 46 years of age; American; married; who has been employed in large cotton mills in the country is opened to a position. Is a practical man and thoroughly understands cotton machinery. Best of references from well known mill men.

1924 **Assistant Supt.**, boss spinner and boss dresser desires a position in a woolen mill. 30 years of age; an American; married. Has worked on all classes of woolen goods on both English and American machinery. Good references from former employers. 15 years' experience.

1914 **A Young Man** who thoroughly understands the keeping of mill books would like a position in the Southern States or would go to Cuba or Puerto Rico. Is a first-class man and perfectly familiar with general office work. An American; 22 years of age; single. Steady and reliable, and can give good references.

2017 **Loom Fixer.** Age 44; Irish; unmarried. Crompton & Knowles' Stafford and Jacquard. Can take position at once. Good references.

1482 **Weaver or Wool Sorter.** Has worked on cassimeres, cheviots, tricots, kerseys and cloakings. Good references.

2024 **Master Mechanic.** Age 28; English; married. Served seven years' apprenticeship in England to millwright engineering. Is familiar with engines, dyeing and bleaching machinery, cotton machinery and paper mill machinery.

2023 **Foreman of Repair Shop.** Age 30; American; married. Several years' experience in cotton mill repair work. Is familiar with almost any kind of machinery as far as repairs go,—Lowell Machine Shop, Hetherington, Kitson, Providence, Biddeford, ect.

1866 **Overseer of Burling** and Sowing or Cloth Examiner in commission house. Have had 25 years' experience in the cloth room and can handle any class of woolens or worsteds, either dress goods or men's wear. 41 years old; Irish; married. Best of references. Have a son 19 years old who is a percher and brusher.

1902 EDITION NOW READY.

The Textile World Official Directory

OF THE

TEXTILE INDUSTRIES.

462 Pages. **22 Textile Maps.**

TABLE OF CONTENTS.

Part I. Textile Manufacturers.

Textile Establishments of the United States, arranged by states and towns where they are located, with full data about each mill, also maps of the manufacturing states showing towns where there are mills. Textile Establishments of the Dominion of Canada, with map of Ontario and Quebec. Alphabetical Index of all the mills in the United States. Mills with Worsted Machinery. Number Spindles and Looms in the United States.

Part II. Yarn Trade Index.

List of Yarn Manufacturers classified. List of Yarn Dealers and Agents.

Part. III. Classified List of Commission and Order Mills. Dyeing and Finishing Establishments.

Commission and Order Work. Bleaching, Dyeing, Printing and Finishing. Shoddy and Extract Manufacturers.

Part IV. Dealers in Raw Material and Stock.

Wool and Shoddy Dealers and Brokers. Cotton Dealers and Brokers. Wholesale Rag Dealers.

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GUILD & LORD, Publishers.

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Runs both ways and Spins like a top.

Wool Trucks,
Yarn Trucks,
Cloth Trucks,
Dye House Trucks,
IN FACT,
ANYTHING IN TRUCKS.

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A PERFECT FIT

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PROMPT DELIVERY—NEXT.

SAYFORD PAPER SPECIALTY CO., Camden, N. J.

FRANK BAILEY

Has placed upon the market

A Cold Air Drying Machine for Yarn.

He is also building a first-class hot air machine. Claims to deliver yarn in far better condition than most machines.

He also makes kettle sticks and dry and sulphur house poles, also sticks to suit the Wolstenholm Machine from natural water grown cedar, and sticks to suit the Klauder-Weldon, and Lorimer machines from finer grades of lumber. These sticks have been thoroughly tested, and pronounced the best on the market. Guarantee satisfaction to buyers. Write for prices.

Cedar Brook; P. O., Camden Co., N. J.

WM. M. YOUNG. GEO. WEINMANN.

KENSINGTON MACHINE WORKS,

Mascher Street, below Lehigh Ave., Philadelphia, Pa.

Patent Rope Machines, Model and Pattern Making,

Gear Cutting, Turning, Grinding, Shaping, Milling, etc. Jobbing, also Blacksmithing and Brazing promptly done. Round and Flat Wire Specialties. Estimates cheerfully given on all kinds of Machinery.

JEFFREY
ELEVATING-CONVEYING
MACHINERY. SEND FOR CATALOGUE.
THE JEFFREY MFG. CO. Columbus, O.

ECONOMICAL — DURABLE — SATISFACTORY

EFFICIENT
POWER
PUMPS.

The Goulds Mfg. Co., SENECA FALLS, N. Y.

ARTHUR F. GRAY,

Mill Architect and Engineer,

Exchange Building, 53 State St., BOSTON, MASS

Plans and Equipment of Cotton and other Textile Mills a specialty.

Valuation of Mill Properties

ADOLPH SUCK,

MILL ARCHITECT AND ENGINEER,

Plans and Specifications for Construction of Cotton, Woolen and other Textile Mills. Remodeling of Old Plants a Specialty.

179 SUMMER ST., BOSTON. MASS.

SAMUEL M. GREEN,

Consulting and Supervising Engineer for the

RECONSTRUCTION OF POWER PLANTS

And General Textile Mill Construction.

HOLYOKE. MASS.

JOHN W. FERGUSON,

Builder and General Contractor.

MILL BUILDING A SPECIALTY. References made to some of the largest mill owners in the Middle States, including Clark Thread Co., Newark, N. J., Barbour Flax Spinning Co., Paterson, N. J., and others.

253 Broadway, New York. *90 Washington St., Paterson, N. J.*

NEW ENGLAND BUTT COMPANY,

304 Pearl St., Providence, R. I.

BRAIDING MACHINERY,

All Styles and Kinds for Flat and Round Braids.

SOLID SASH AND CURTAIN CORDS.

Shoe and Corset Laces, Banding and all

BRAIDED FABRICS.

BUY RUBBER STAMP GOODS DIRECT OF MAKER. SEND FOR CATALOGUE. HIGH GRADE, AT LOW PRICES. Factory Equipment a Specialty. THE YENLO CO. MFG'S YORK PA.

SHEARS for finishing Cotton, Wool or Worsted Fabrics made in single sets or in several sets to finish face and back at one feed, saving space, time, cost. The Combined Shear and Roller for Carpets is an example. Baling and Finishing Presses. Presses for Straw, Felt and Buckram Hats. Shafting, Gearing. We grind or repair all makes of Shears. GEO. C. HOWARD, Lansdowne, Delaware Co., Pa.

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Awarded at

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of 1900

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and

Textile World Directory.

Bindings, Webs etc.

HAMILTON MILLS. **Spool Tapes** and Stay Bindings.

J. H. HAMILTON & CO. 84 FRANKLIN ST., NEW YORK.

Charleston Export & Commission Co.

SELLING AGENTS for MILLS

Manufacturing Cottonades, Cheviots, Sheeting, Shirting, Drilling, Duck, Kerseys, Plaids, Tickings, Hosiery, Towels, Seine, Twine Cotton Batting, Knitting Cotton, Ball Thread, Wrapping Twine.

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Cotton Yarns, Cotton Cloth, Silesia, Sateens

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DOMETS—CAMBRICS—SILESIAS

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KROUT & FITE MFG. CO.,

Manufacturers of

SILK and COTTON NARROW FABRICS

Spool Tapes a Specialty.

Office and Mill, Allegheny Ave. and Emerald St., PHILADELPHIA.

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Silk, Cotton, Medium and Superfine, and Non-Elastic

BINDINGS.

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2046 Amber St., Philadelphia.

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SOLIS : : BOSTON.

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ANDREW J. SOLIS, Jr. & CO.

Incorporated 1899.

AMERICAN COTTON YARN EXCHANGE

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Cotton Yarn Exchange

COMBED AND CARDED COTTON YARNS

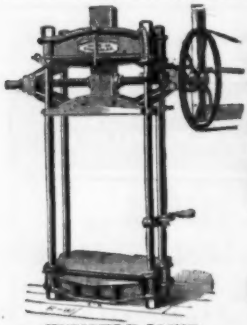
From Northern and Southern Mills.

American, Egyptian, Peruvian and Sea Islands.

ARNOLD B. SANFORD, Pres. and Gen. Mgr.

OFFICES: 67 Chauncy St., Boston. 240 Chestnut St., Philadelphia. 108 Franklin St., N. Y. with James Talcott.

Long Distance Telephone, Oxford 1120.



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338 West Water St., SYRACUSE, N. Y.

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EASTON AND BURNHAM MACHINE CO.,

Pawtucket, R.I.

ALL KINDS OF Spindles USED IN THE MANUFACTURE OF COTTON, WOOL & SILK

IMPROVED UPRIGHT SPOOLERS

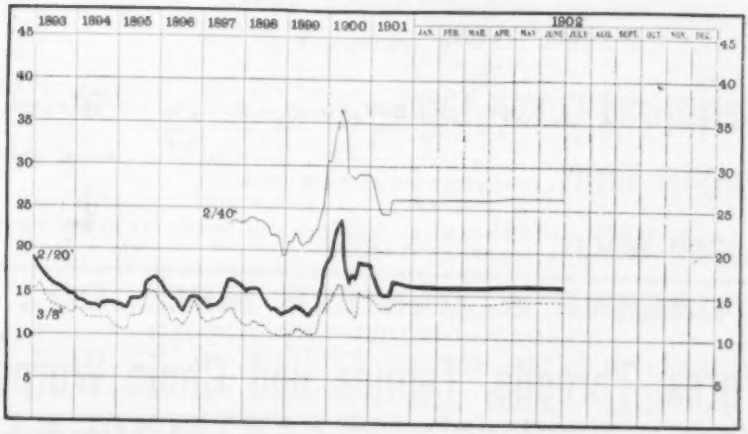
TO SPOOL FROM COP, SKEIN, OR BOBBIN.

Knitting and Weaving Yarns

Cones, Cops, Warps, Skeins,
Single, Double, Three-ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.

EDWARD S. HYDE, 223 and 225 Chestnut Street, Philadelphia, Pa.

YARN DEPARTMENT.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

Cotton Yarn Market.

Since our last report the cotton yarn market has been very dull. This condition has been accentuated during the last few weeks. It is seldom that the sales have been so small or quotations as nominal as at the present time.

The causes for this condition are the large stocks of yarn, principally coarse counts, offered for sale, and the determination of knitters and weavers to confine their purchases to actual requirements and not discount the future.

Southern manufacturers, who are mainly responsible for the large stock of coarse yarn that is threatening the market, are agitating the question of further curtailment of production, and it is to be hoped that this plan will be carried out generally among the cotton yarn mills of the country.

At the present time prices are below the cost of manufacture. Knitting yarn may be said to be somewhat more active than weaving yarn, but very little is doing in either line. Probably one factor that is influencing the market now is the near approach of stock taking and the desire of dealers and manufacturers to carry as small a stock as possible at that time.

An exception to the prevailing dullness is found in mercerized yarns, which are moving in fair volume. Compared with the total amount of yarn spun this line is so small as to have but little effect upon general market conditions.

We quote as follows:—

Eastern Cops.

6s	14¼
8s	14½
10s	14¾-15
14s	15¾-16¾
16s	16¼
22s	18
24s	18½
26s	18½-19
30s	20½-21
34s	22
36s	23
40s	23-24½

On cones, ¾c. more up to 14s; 1c. more from 16s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carder Peeler.

12s	16½-17
14s	17
18s	17½
20s	18-18½
22s	18½-19
26s	19½-20
28s	20-20½
30s	20½-21
36s	22
40s	23½
45s	27
50s	31-32
55s	34
60s	39-40

Eastern Two-Ply Warps, Carder Peeler.

2/30s	21
2/36s	22-23
2/40s	24-25
2/45s	26-27
2/50s	32-33
2/60s	40-41

Egyptian Weaving Yarns.

Single Skeins Combed.

30s	31-33
35s	35
40s	37
45s	39
50s	42
55s	45
60s	49-52
70s	59
80s	70
90s	73-74

Two and Three Ply Skeins, Combed.

30s	34

The J. R. MONTGOMERY CO.,
WINDSOR LOCKS, CONN.

Manufacturers of

Mercerized Cotton Yarns. GIVES THE HIGH SILK-LIKE LUSTRE IN KNIT GOODS AND WOVEN FABRICS

Novelty Yarns. BOUCLE, BOURETTE AND SPIRALS, IN COTTON, WOOL WORSTED, MOHAIR AND SILK.

Cotton Warps. ON BEAMS, JACK SPOOLS AND TUBES. IN FANCY TWIST COLORS AND PRINTED.

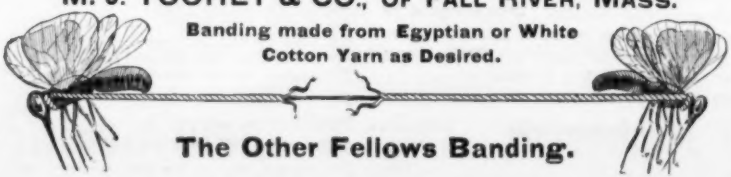
GREENE & DANIELS MFG. CO.,
COMBED, CARDED AND GASSED
Yarns, Threads, Twines and Chain Warps,
Colored and Bleached Yarns Furnished in any manner desired by the trade. **PAWTUCKET, R.I.**

MONUMENT MILLS,
Manufacturers of
White, Colored, Fancy and Double Twist
HOUSATONIC, MASS.
Cotton Warps
4s to 60s.

OIL SEEDS PRESSING COMPANY,
Manufacturers and Importers of
VEGETABLE OILS.
15 to 25 Whitehall Street, - - New York.

BALLOU YARN COMPANY, PROVIDENCE, R. I.
GASSED YARN, Harness and Seine Twines and other Job Gassing, Winding, &c. All Numbers. **SPECIALTIES**

M. J. TOOHEY & CO., OF FALL RIVER, MASS.
Banding made from Egyptian or White Cotton Yarn as Desired.



The Other Fellows Banding.

36s	36
40s	37
45s	38
50s	43
55s	47
60s	49
65s	54

Combed Egyptian Cones.

30/2	36
36/2	37-37½
38/2	38-39
40/2	39½-40½

Philadelphia Yarn Market.

We have to report that, as usual, the government report on cotton demoralized the yarn market to some extent this month. Spinners are having to pay about the same price for cotton, but are obliged to take considerably less for their product and lose money.

There would be some justice somewhere, in this, if the market report indicated a positive condition, so they could be sure what conditions would prevail next fall. It is only guesswork; the crop is not made yet. Prices may be high or low, but spinners have to suffer for it just the same.

From the spinners' standpoint, it would seem as if the prices are all below cost today. There has been a much heavier drop in the price of yarn than cotton. This is particularly noticeable on stock yarns, especially where the trade is affected by the local strikes.

We quote as follows:

7s and coarser	14
8s and 9s	14-14½

Southern frame cones (good quality):—

10s	14-14½
12s	14½-15
14s	14½-15¼
16s	15¼-15⅝
18s	15½-16
20s	16-16½
22s	16-16½
24s	17
26s	17-17½
30s	18
40s	24-24½
50s	31-32

Southern high grade mule yarn:—

Cones.

10s	15¼-15½
12s	15¾-16
14s	16¼-16½
16s	16¾-17
18s	17½
20s and 22s	17¼-18
24s	18-18½

Southern frame yarn, lower grades:—

6s and 8s	13¾-14

RICHARD A. BLYTHE,
Commission Merchant,
Cotton Yarns of every description.
114 Chestnut Street, - PHILADELPHIA.

Buckingham, Paulson & Co.,
COMMISSION MERCHANTS.
COTTON YARNS of all Descriptions.
83 Leonard St., New York.
120 Chestnut Street, Phila. 530 5th Ave., Chicago. Ills
Cash Advances, Cash Sales and Prompt Returns. Consignments and correspondence solicited.

JAMES E. MITCHELL & CO.,
COMMISSION MERCHANTS.
COTTON YARNS
FOR ALL PURPOSES.
122-124 Chestnut St., PHILADELPHIA, PA.
Brown Building 185 Summer St., BOSTON, MASS.

LINEN YARN IMPORTER.
Hughes Fawcett, 115 Franklin St., New York,
Flax, Hemp & Jute Line and Tow Yarns,
FOR WEAVING PURPOSES
Linen Jacquard Harness Twines.
Fine Cotton Harness and Heddle Twines.
For Cotton, Silk, Woolen and Carpet manufacturers. Correspondence solicited. Samples promptly furnished

J. S. DODDS,
317 Wool Exchange, New York, N. Y

MERCERIZED YARNS
Two and Three Ply, for All Purposes,
In Peeler, Egyptian and Sea Island, gassed and ungassed, natural and dyed. Fast Black for cross dyeing a specialty.
Through H. A. CAESAR & CO.

A. D. SALKELD & BRO.
With
FRED'K VIETOR & ACHELIS.
YARNS,
66-72 LEONARD ST., NEW YORK.

MOELLER & LITTAUER,
IMPORTERS AND MANUFACTURERS OF
Silk, Worsted, Woolen, Cotton & Mohair Yarns and Tinsel. Chardonnet Artificial Silk.
Mercerized, Turkey-Red, Swiss Emb. Yarns.
109 Green St, NEW YORK.

E. C. HARPER,
WORSTED AND WOOLEN YARNS,
MERCERIZED COTTON,
395 Broadway, New York.
Tel. 1828 Franklin.

Eddy & Street,
COTTON, WOOLEN, **YARNS** AND **BRAIDS** WORSTED, SPUN SILK.
PROVIDENCE, R. I.

CAPACITY, 50,000 Spindles.

ORSWELL MILLS

FITCHBURG MASS.

COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

WILLIAM FIRTH, PRESIDENT. FRANK B. COMINS, TREASURER

AMERICAN MOISTENING COMPANY,

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The "Drosophore" and "Vortex" Humidifiers.

Over 20.000 of our HUMIDIFIERS in operation.

Highest award on the Recommendation of The FRANKLIN INSTITUTE for

"SIMPLICITY and ORIGINALITY of DESIGN"

DANA WARP MILLS

Westbrook, Maine.

WHITE AND COLORED WARPS,

6s to 50s—Single and Ply.

MULE COPS,

from 30s to 50s from

AMERICAN AND EGYPTIAN COTTON.

Indian Orchard Company

Cotton Warps and Yarns in Grey and all Colors, Single or two or more Ply, and Cable Cord.

Novelty Yarns in Various Patterns, Colors and Twists.

Carded and Colored Cotton For Mixing with wool, Machined or in Roving.

Indian Orchard, Mass.

J. MORGAN-PRES. H. B. WRIGHT-TREAS. W. C. GODFREY-AGT.

10s	14

Eastern cones (high grade quality):—

10s	15½-16
12s	16-16½
14s	16½-17
16s	17-17½
18s	17¼-17¾
20s and 22s	18-18¼

Lower grades, Eastern yarn:—

6s and 8s	13¾-14
10s	14

Rise ¼c. per number to 16s.

Besides this, there is some comber waste used, that is made into 8s and 10s cones and sold at 13½-14.

Skein yarn (mostly Southern):—

4s to 6s soft	13½-14
10s to 12s	14-14½
14s to 20s	14½-15
22s	15-15¼
14/2	14-14¼
16/2	14½-14¾
20/2	15½
30/2	17-17½
40/2	21-21½
16/3 slack	15½
12/3 slack	14¾
8/3 carpet	13¾-14¼

Skein yarn (mostly Southern):—

8/3 slack	14¼-14½
9/4 slack	14¼-14½

Warps (mostly Southern):—

14s to 16s	14½-15
20s and 22s	15-15¼
26s	15½-16
14/2	14½
16/2	15-15½
20/2	15½
24/2	16-16½
30/2	17½
40/2	22-22½
40/1	22-23

Mixed colored yarns (mock twist, half colors):—

6s to 10s	15½-16
12s to 14s	16-16½
16s to 18s	17-18

Silver and jaeger, 1½ over white.

Mock Egyptian, 2c. advance over white.

Egyptian, 5c. to 6c. above best quality white.

Combed yarn 6c. above carded.

Worsted Yarn.

Spinners are accepting some orders at old prices, but they are very firm and prices are liable to advance on any considerable buying from 3 to 5 cents per pound according to quality.

Worsted wools have advanced and spinners are closing out yarns made from old wools at the lower range of prices in order to tide over until the new season starts. The question spinners must face is the price cloth is sold at by the leading weaving mills; if these mills because of a protracted strike have yarn made up from low priced wool, the other mills must meet those prices or be unable to sell cloth, and the result will be that

CATLIN & CO.,
YARNS.
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Walcott & Campbell Spinning Co.
FANCY HOSIERY YARNS
IN ALL COLORS.
New York Mills, Oneida Co., - N. Y.

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Colored Cotton Hosiery Yarns, Double and Twist Yarns for the Weaving Trade.
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COMBED AND CARDED COTTON.
YARNS 40s and above. AND
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COTTON, WORSTED, WOOLEN, MERINO AND FRENCH SPUN YARNS
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Mercerized, Turkey Red, Gassed } Cotton Yarns.
Jacquard and Harness Twines.

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MANUFACTURERS OF
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Jacquard Harness Twines of all kinds on hand and made to order.
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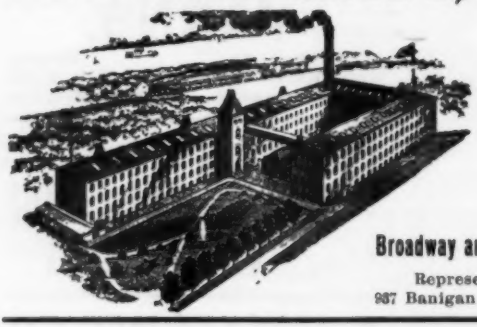

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Fine Worsted Yarns

OFFICE AND MILLS:

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Represented by FIRTH BROADHEAD,
937 Banigan Building, Providence, R. I.

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MANFRS. OF
ALL NUMBERS SINGLE AND TWO-PLY,

Worsted YARNS,
Sell Direct,

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Worsted and Mohair Yarns — white or colors, in skeins, on spools, cones, or shuttle bobbins.

NOVELTY YARNS — of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making Yarns only.

CENAPPED YARNS of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

...Dyers of Yarn and Slubbing...

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FRENCH SYSTEM. BRADFORD SYSTEM

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MANUFACTURERS OF

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MANUFACTURERS OF

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Mills, Frankford, Pa. Office, 220 CHESTNUT ST., PHILA.

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CLEANS WOOL, FLOORS ANYTHING.
INDIA ALKALI WORKS, Boston.

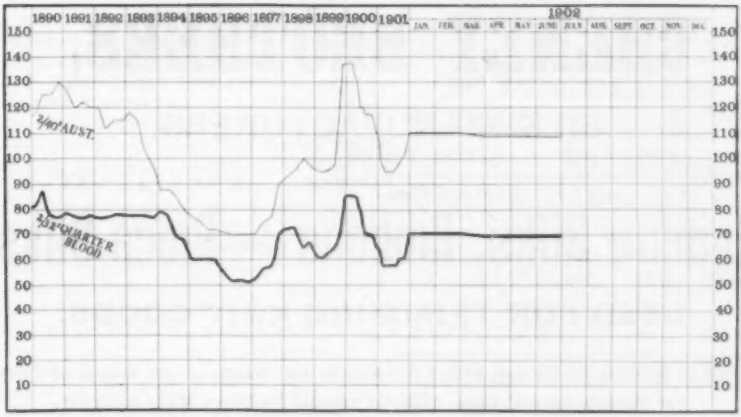

CHART SHOWING RANGES OF PRICE OF WORSTED YARN.

spinners must sell yarn low enough by buying wool cheap enough—or the weavers in order to secure a portion of the business will be obliged to fall back on cotton warps and make cotton worsteds or worsted warps and woolen yarn filling. In this event the spinners of worsted yarn will have a slow trade, which will in its turn affect the wool trade.

At the present writing weavers are in no position to know what their requirements are to be. The light weight season on fancy worsteds will not open before last of July to first of August, and therefore weavers are in no position to buy large quantities of yarn.

On serges it is different; some good orders for serges have already been placed and fine serges seem to have become popular again. Orders for yarn have been placed to cover orders for cloth already secured. Said one very large weaver on serges: "We have already sold our mill half up on this class of cloth. The yarn bought for this cloth is 2/36s in ⅜ Blood quality." Many of

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO., 47 LEONARD ST., NEW YORK.

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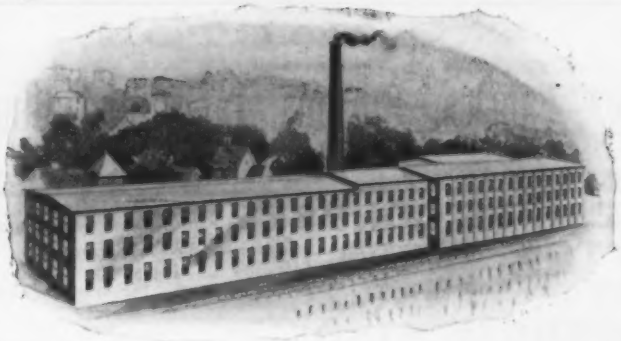

MOHAIR TOPS
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LUSTRE YARNS
FOR SERGE LININGS.
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Knitting Silks, Ribbons AND Piece Silks,

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Spools or Cones, for Manufacturers' Use. Silk for Special Purposes Made to Order.

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SALESROOMS: 477, 479 and 481 Broome Street, NEW YORK.
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WILLIAM RYLE & CO.,

DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

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Manufacturer of

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FOR THE MANUFACTURING TRADE.

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FIRE HOSE CORDS { From long staple cotton—6s to 20s yarn in 2 to 100 ply—16 lbs. without a knot.

COTTON WARPS { On beams—single or ply yarns, grey, bleached or colored.

GLAZED YARNS { All plys—any color—for braiders, harness and sewing threads.

UNIVERSAL WIND { For braider cops—warp yarns—grey or colored—2 inch to 12 inch traverse.

Dyeing facilities are new and best quality work guaranteed.
We are prepared to dye yarns for other parties.

WHITTIER MILLS, Selling Office, Springfield, Mass.
Mill, Chattahoochee, Ga.

the mills are keeping out of the market until after stock taking and will place no orders until after July 4th.

Clay Worsteds are slow sellers at this time and weavers are in no hurry to cover for yarn out of which to make this cloth. The season is hardly opened on this class of cloth. Last year the trade did not start until latter part of July, when the mills were rapidly sold up. Many of the Clay mills during the last six months have been running on fancy worsteds, and at least one new Clay worsted mill was unable to run more than 20 looms out of 100 looms. Yarns out of which Clays are made will be advanced in price the coming season as it is on this class of wool that the greatest advance is being made.

Weavers do not seem to worry about prospective advances, for, while it is believed an advance is probable, yet the goods trade is so slow that orders will not be placed on speculation. Weavers know they could save 2/3 cents per pound on yarn by placing their orders early, yet fear to take chances.

The spinners during the last month have experienced a curious turn of affairs. During March, April and May weavers could not secure yarn fast enough and spinners were working hard to meet requirements; about the first of June this business was largely checked; weavers refused either to place orders or give further spinning instructions, and as a result, from a busy rush of work spinners were brought almost to a standstill.

The French spun spinners are fairly well sold up, but can see the end of their orders. Manufacturers have bought sparingly on account of the high prices asked, and in some instances, notably hosiery, even though manufacturers bought yarn they can see no profit on their products as no advance could be made to the consumer. Hence knitters are trying woolen spun merino yarn.

The weavers are using some French spun worsted yarn for clay worsteds but not to a great extent, as this class of cloth at the present writing is selling but poorly.

The dress goods manufacturers are well employed, but no rush is on. Much low quarter blood yarn is used and some ⅜ blood quality is also bought in quantities. Spinners undoubtedly will have as much business during the coming season as they can well handle.

Top manufacturers are well employed and have advanced prices 4 to 5 cents per pound. The advance on tops is made first as the comber is the nearest wool dealer. Manufacturers of all kinds are well employed, but there is no rush on. This may be all changed to a rush period from August until December as buyers delay orders and force weavers to do 6 months' work in 2 or 3 months. Prices are firm with a decidedly advancing tendency.

We quote:—

2/40s	Australian	1.10
2/40s	XX Delaine	1.02½
2/40s	Half Blood	.92½
2/30s	Half Blood	.80
2/36s	⅜ Blood	.72
2/26s	¼ Blood	.68

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Silkine also Lisle Silk

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DEXTER YARN CO.

Cotton Yarns in Cops, Cones and Skeins; on Beams or Spools, Single and Twisted. Cable Cords and Twines.

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WORSTED and WOOLEN
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A SPECIALTY.
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WOOLEN AND MERINO YARNS,

1 to 10 Runs, at reasonable prices.

All Wool, Mohair and Wool Spun or Mixed Cotton and Shoddy Yarns, in white, gray and colors.

Dress Goods Yarns a Specialty.

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WOOL SPUN YARNS.

YARNS FOR FLEECED LINED, and general Knit Goods our specialties. Equipment first-class. Prices low. Custom work of any kind. Get our figures.

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COTTON WASTE,
Card Strips, Oily Card, Peeler, Sea Island and Egyptian Comber.

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BUYERS of all kinds of hosiery and woolen and cotton Mill Wastes.

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SHODDIES OF EVERY DESCRIPTION.
CAPACITY 7,000,000 POUNDS PER ANNUM.
CUSTOM CARBONIZING AND GARNETTING A SPECIALTY.
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H. & D. FEINGOLD, 89 & 91 Bedford St., Boston, Mass.
Telephone, Oxford 1431-2.

Woolen Yarn.

Spinners continue busy with old contracts and with prospective business which will carry them until the first of the year. Spinners have been able to take care of old customers only, and have been forced to turn away much new business. The trade is varied and takes in the whole range of the woolen industry. Weavers have been using much woolen yarn, as the present heavy weight season has been a woolen season and weavers in order to get the dull finish on their fancy worsted cloth have been using much wool yarn filling.

The rubber boot lining trade has been buying much woolen yarn, but of a very cheap quality, to meet prices set on cloth by the rubber boot companies. This lining trade has covered itself with yarn which will last at least six months.

The overcoating trade is buying much yarn outside and has contracted for machinery until January. The demand for backing yarn for fleece-lined underwear is on, and spinners are urged to make prompt shipments. This trade will last until October and November, when the balbriggan business starts up again.

The yarns for underwear are largely sold to mills manufacturing novelties and ribbed underwear. These mills are largely employed and are running late at night, while the flat underwear mills are having but a slow business.

The flat goods mills which are running are using a medium grade of wool. Buyers last year were willing to accept any kind of cheap trash; this season this demand has advanced a step for better garments. The buyers want all woolen, grade being of no consequence. Next season buyers will want the better grades.

Most of the flat goods mills which have been successful are making a garment out of fine garnetted thread waste and Australian lamb's wool.

It seems strange to note the various demands in Congress for the use of all wool, when the fact of the matter is that the West are buying all the cotton fleece lined underwear. One large knitter told the writer that the West bought early and largely quantities of cotton fleece shirts, but bought sparingly and as few as possible of all wool garments, and that is why the flat goods underwear manufacturers are getting orders later each year. The future is bright for these flat goods mills.

We have had a cold winter and buyers will be forced later to place some large duplicate orders as the season advances.

Whether the manufacturers will meet this demand or keep to their regular seasons is the question which must be faced later. The knitters have but little stocks of yarn and any new business must necessitate prompt buying. They are especially low on Australian lambs' wool, as manufacturers are buying only to cover immediate requirements.

Lambs' wool has advanced 4 or 5 cents per pound on the London wool sales. Thread waste has advanced 3 to 5 cents per pound, but from our advices we believe the advance in Europe has been checked. Under the date of July 1st a correspondent writes:—

"Since our last report business has remained quiet in our French markets and prices show a downward tendency. However, as top makers are not overburdened with stock, they do not force sales and a serious fall in values is not likely to take place. Manufacturers are still well occupied on old contracts, but new orders are difficult to obtain, dealers refusing to pay the advance corresponding to the present level of raw wool."

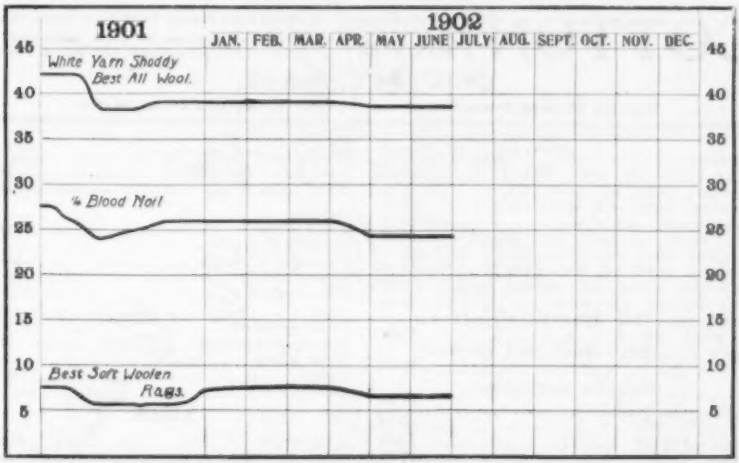

CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

Shoddy Market.

Little sign of activity is perceptible in this market, and although shoddy men have not despaired entirely of receiving some good heavyweight re-orders, they find that these are extremely slow in materializing. There has been scarcely any change in prices, and quotations, though largely nominal, are practically the same as those of a month ago. Deliveries on some of the old orders are still being held back, while samples for the coming season are being made into light weights at many of the goods mills. On the face of things, this looks as though the heavy weight season was about over, but there is still time for a good deal of trade on these lines.

A resume of the heavy weight period now presumably drawing to a close may be said to have occasioned rather less than a fair amount of business, but as at this writing it is impossible to tell its duration, the season as a whole may average up somewhat better than has been expected. Should the anticipated rise take place in the wool market, a material change for the better may be looked for irrespective of seasons.

NOILS AND WOOL WASTE.

Scarcely any change is noticeable in this market, and few transactions have marked the past weeks. The steadiness here is due more to lack of sales than to any market condition, and it is extremely doubtful if lower quotations would influence trade. The breadth of selection has increased so that the first buyers who enter the field will have nothing as regards unlimited choice to complain of, and from present indications the general tendency of the wool market will hasten these first sales.

The cotton waste market is practically unchanged and very little stock is moving. The quotations of a month ago still hold.

RAG MARKET.

Toward the middle of the past month a change for the better was noticeable in clip stock. The demand for blue worsteds has fallen off; black worsteds, fine dark and fine light stock show marked activity. Today almost all of the better grades show this, while the lower stocks are still sluggish.

In rags fine dark merinos have received what call there is, other stocks showing scarcely any sign of life. As a rule, prices have been steady, for both rag and shoddy men have realized that concessions would create no larger volume of business. The general outlook seems fair for the next month, as it is generally believed that the heavy weight season will show signs of life for another four or five weeks.

SHODDIES AND EXTRACTS.

White yarn, best all wool	38-40
White knit, all wool, best, fine	28-33
White knit, No. 2	23-25
Light yarn, extra fine	25-28
New pure indigo blue	23-25
Fine worsted, new black	26
New blue clip, best, fine	20-23
Dark mixed yarn, extra fine	22-24
All wool yarn, medium and coarse grades	15-20

WILLIAM B. CHARLES,
COTTON AND COTTON WASTES.
AMSTERDAM, N. Y., U.S.A.

COTTON YARNS. **Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited.**
Shepperdson's Code, 1878. Cable Address "Charles."

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COTTON Egyptian, Peruvian, **American Long Staple a Specialty.** Shipments direct to mill from Egypt, Peru and all American Southern Points.

CHICOPEE, MASS.

Cotton Waste Purchased on Yearly Contract from Mills.

Merino.
Fine light, all wool, No. 1 24-25
Medium light, all wool, No. 1 ....16½-17½
Medium light, all wool, No. 2 14-16
Fine black, all wool 20-22
Fine dark, all wool, best grade 17-18
Medium dark, all wool, No. 1 13-15
Medium dark, all wool, No. 2 12-13
Red knit stock, strictly all wool 19-20
Red flannel, all wool 19-20
Dark blue for hosiery, strictly all wool, No. 1 17-20
Dark blue for hosiery, not all wool, No. 2 12-14

DELAINE EXTRACTS.

Light 19-22
Medium light 15-17
Regular gray 12-13
Black 14-15
Fancy colors 16-20

WOOLEN RAGS.

Fine merchant tailors, all colors..... 8-9
Choice light colors 12-14
Browns 12-13
Blacks 9-10
Fine blues, plain 10-11
Fine dark 10-11
Medium dark 6½-7½

Worsteds.
Blue 15½-16½
Black 20-21

Serges.
New blue 15-16
New black 14-15

Flannels.
New scarlet 18½-22
New blue 17-18
Cloakings 3-4

SOFTS AND KNIT STOCK.

Soft woolens, best 6-6½
Old white flannels 14-16
White flannels, No. 2 11-12
Old red flannels 8½-9
Light blue flannels 6½-7¼
Old blue flannels 6-7
Old plaids 5-7
White stockings 17-18
White hood stock 20-21
Clear hoods 7-8
Red stockings 7-8
Blue stockings 7-9
Fancy stockings, No. 1 7-9
Gray stockings 8-9
Black stockings 9-10
Knit stock comforters 6-7¼
Red knit 8½-9
Light gray knit 8-9
New light fancies 14-15
New fancies 11-12

Merinos.
Light, fine 14-15
Light, coarse 7-8
Fine dark 9-10½
Dark, No. 2 ..... 5-6½
Coarse dark 4-4½
Blue 10-11
Blue—seamed 14-15
Black—unseamed 10-11
New black 18-20
Small 2½-3½
Bunting 6-8

NOILS.

Australian 48-50
Fine domestic 38-40
½ Blood 24-28
⅝ Blood 22-23
¼ Blood 17-19
Braid 21-22
Carpet (white) 14-18
Carpet (colored) 10-12½

Seedy.
½ Blood 35-37
⅝ Blood 27-30
¼ Blood 23-26

FLOCKS.

Shear, fine white, all wool 9-11
Fine indigo blue, all wool 9-9½
Fine black, and blue, all wool 7-8
Fine dark, all wool.....5-6
Gig, fine, all wool 3-4
No. 1, black, all wool cut 6-7
All wool, fancy, shear and gig 2½-3½

COTTON WASTE.

No. 1 Spinners 8
No. 1 Machine 5-5½
No. 2 Machine 4½-5
Machine Cop 5½-6
No. 1 Cop 6
No. 1 Card 6½-7
No. 2 Card 4
No. 1 Oily Card 3-3½
No. 2. Oily Card 2-2½
Egyptian Card 7¼-7½
Peeler Combing 8¼-8½
Egyptian Combing 8¼-8¼
No. 1 Linters 3½-4½
No. 2 Linters 3-3½
White Clips 4-5
Colored Clips 2-3½
No. 1 Picker 1¾-3½

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SHEETINGS

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N. Y. City.

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Globe Bleach and Dye Works,
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140 Chestnut St., Philadelphia.

DUNCAN & BAILLIE,

COHOES DYE WORKS, COHOES, N. Y.

Dyers of Raw Cotton and Wool.

CLOTH BLEACHED AND DYED IN THE ROLL.

Capacity 10,000 lbs. per day. Prompt Deliveries.

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Of all classes of LINEN GOODS.
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ESPECIALLY FOR THE Knit Goods Trade.

Give Us A Trial.

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COTTON HOSIERY MANUFACTURERS.

We are Dyers of Cotton Hosiery in all the popular Shades, and Fast Black, in either Full Lisle, Singed or Plain Finish. Our Fast Blacks, unexcelled for beauty of shade and finish, are sanitary and stainless.

Samples showing our dyeing will be mailed on application.
Correspondence solicited.
Also dyers of cotton piece goods and yarns.

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PENNYPACK YARN FINISHING COMPANY,
HOLMESBURG, PHILA., PA.
Mercerizers of Skein Yarns.
Largest Capacity in the Country.
Correspondence Solicited.

WE ARE DYERS OF ALL KINDS OF YARNS AND COTTON WARPS.
We are sure we can give you better work and better service then you can get elsewhere
A trial will convince.
T. BROPHY'S SONS, Jasper St., above Clearfield St., PHILA., PA.

HOWARD & CO., Ducks, Drills and Muslins Dyed in Any Color.
Dyers and Finishers of
St. Georges' Ave., Rahway, - N. J.
COTTON and PIECE GOODS In All Branches.

DAVIDSON & BROOKE, ORIANNA BLEACH WORKS.
BLEACHERS
Of Turkish Towels, Cotton Yarns, Underwear, Tapes and Hosiery.
Turkish Towels made up to suit the trade and shipped to any point.
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Correspondence solicited.

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FAST BLACK A SPECIALTY.
Charlotte Dye Works,
Cotton, Woolen, Worsted, Hosiery.

AMERICAN YARN PRINTING WORKS. JOHN FORREST Printer of Cotton, Woolen, Silk and Worsted Yarns and Warps for Woven and Knit Goods. Bleaching of Cotton and Woolen Yarns a Specialty. 134 to 150 North 22d St., Philadelphia, Pa.

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Manufacturers of Ladies', Misses' and Children's Fine Ribbed Underwear.
BLEACHING AND DYEING FOR THE TRADE **OUR SPECIALTY.**
Correspondence Solicited.

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Also Dyers of TURKEY REDS AND INDIGO BLUES for all Purposes in either Warp or Skein.
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FIRTH & FOSTER CO.,

Dyers and Finishers of

Dress Goods, Men's Wear and Cloakings, such as Venetians, Armures, Soleils, Crepons, also Silk Warp Fabrics, Cotton Warp Linings, Suitings, Clays, Serges, Worsted Damasks, Tapestries and Shirtings.

Particular attention given to fast colors on cotton and worsted yarns, slubbing and stock dying.

Special black for the silk trade on fine cotton yarns.

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PETER B. McMANUS, Proprietor.

Dyers and Bleachers of Cotton Yarns,

PAWTUCKET, R. I.

Pawtucket Dyeing & Bleaching Co.,

BLEACHERS AND DYERS OF

COTTON YARNS AND STOCKINET.

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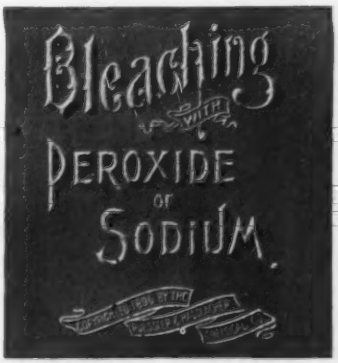

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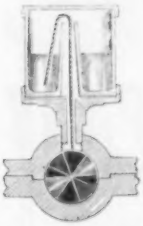

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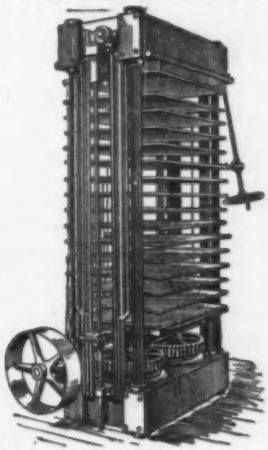

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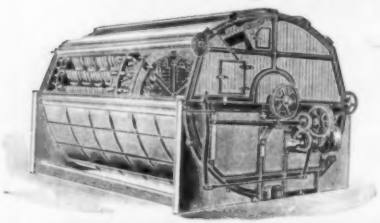

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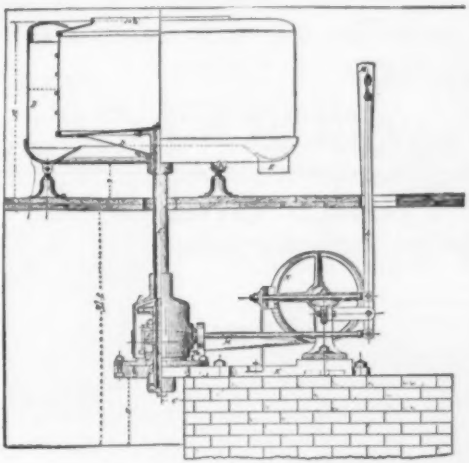

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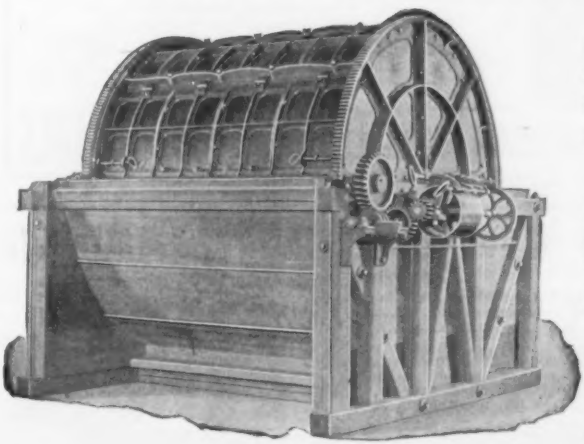

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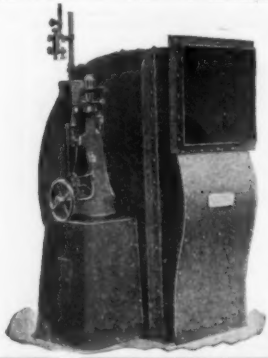

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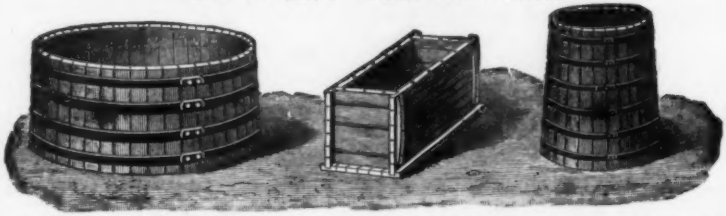

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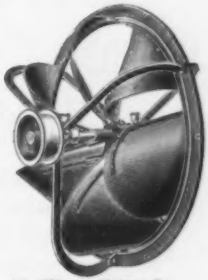

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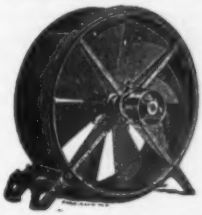

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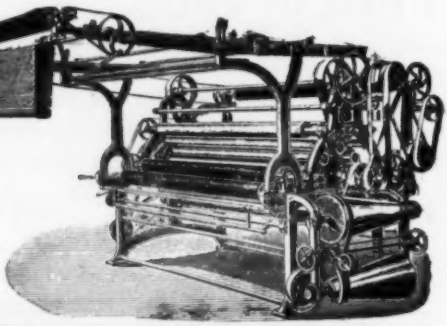

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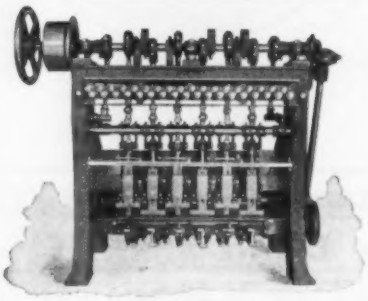

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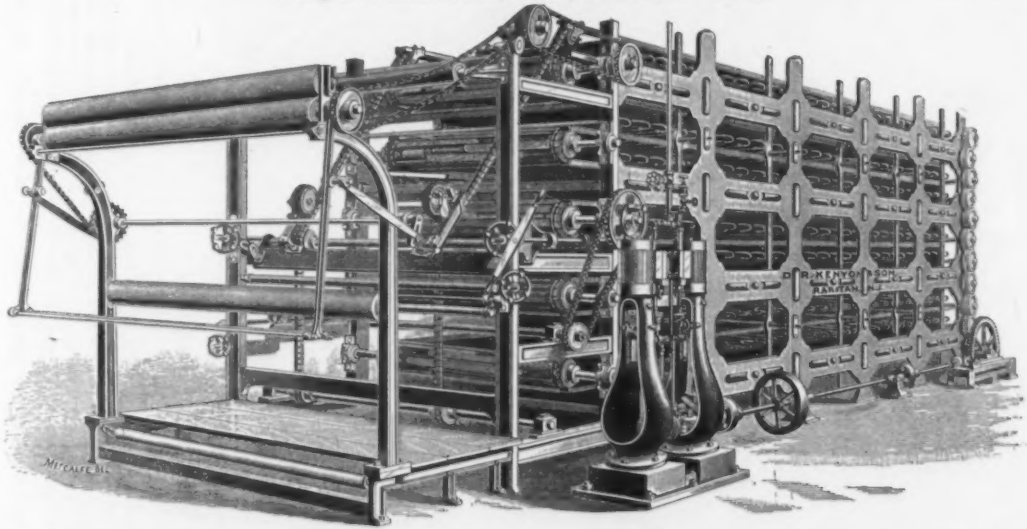

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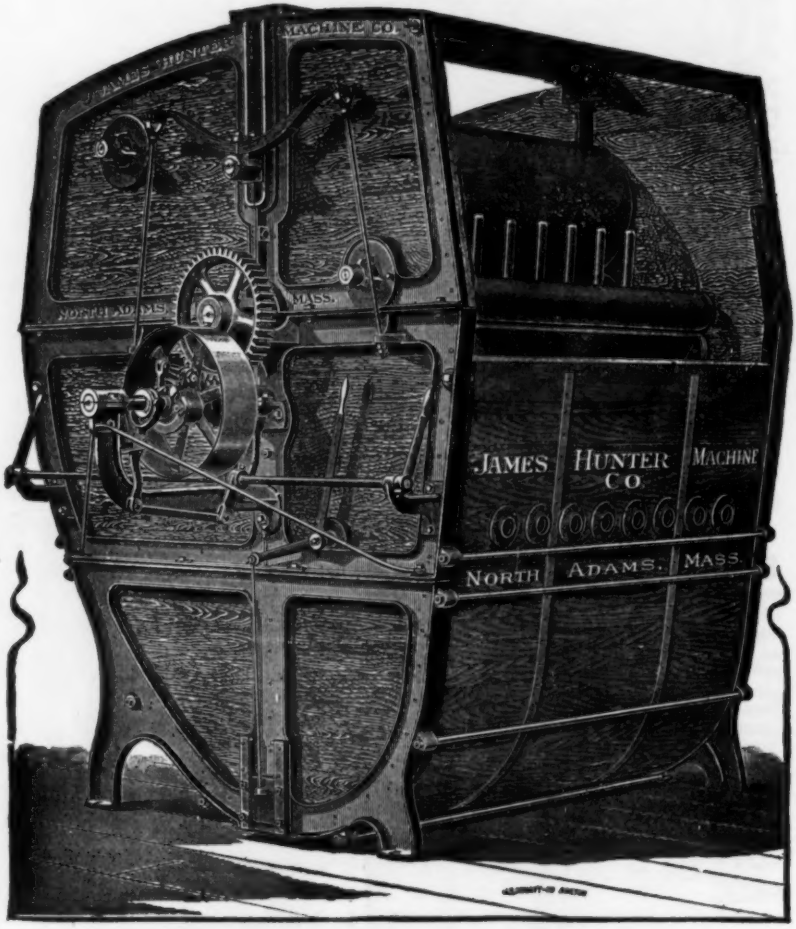

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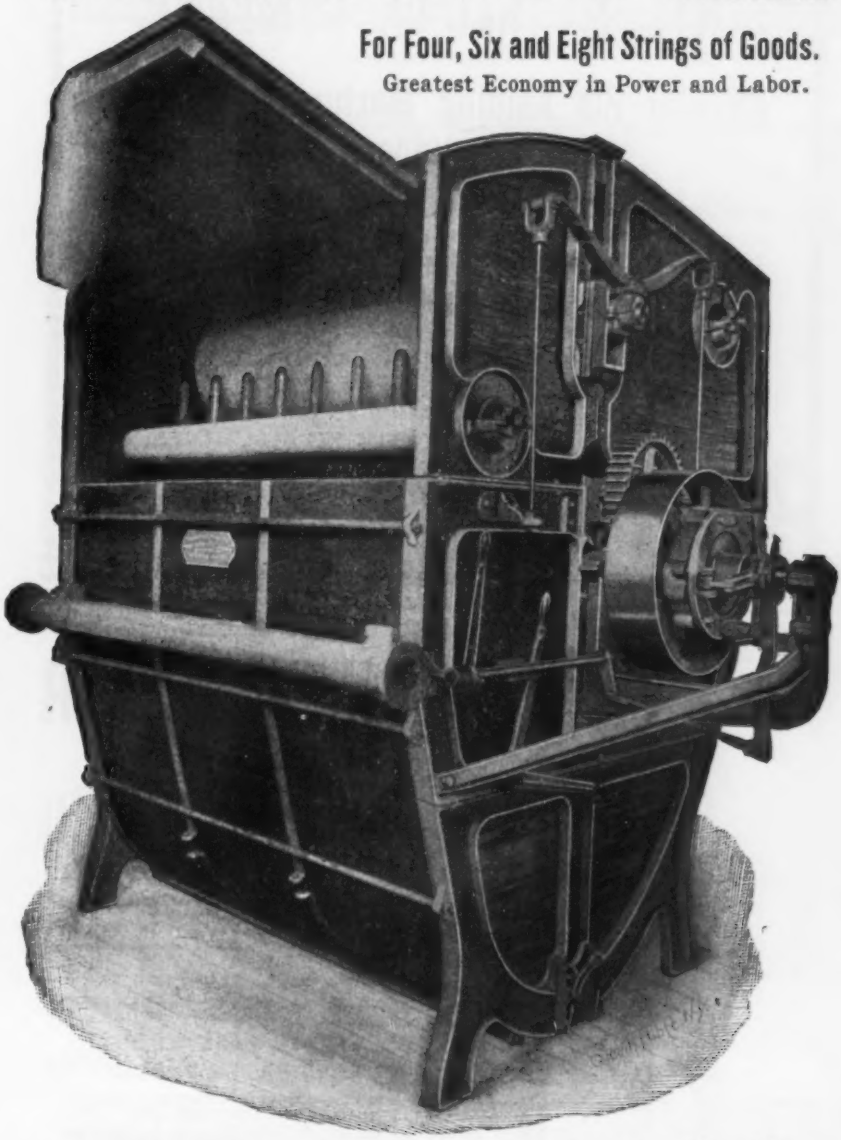

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Underwear Machinery,

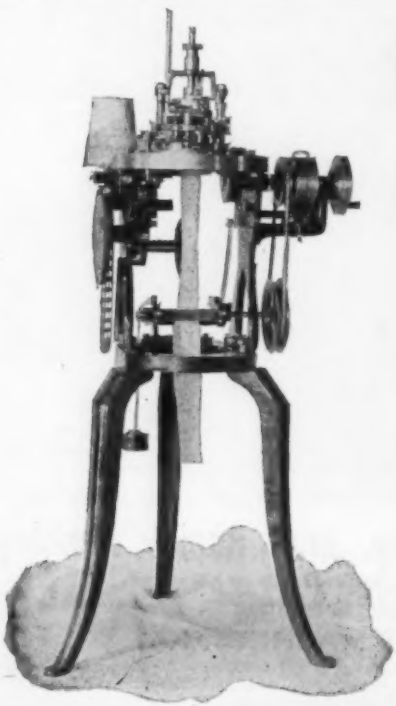
For Ladies' Vests, Combination Suits, Corset Covers, etc.
Men's Underwear, Sweaters, etc.

New Improved Sleeve Machines.
Machines for Rib Hosiery, Rib Tops and Cuffs.

LATEST IMPROVEMENTS ON ALL MACHINES.

MECHANICAL STOP MOTIONS
FOR CIRCULAR RIB KNITTING MACHINES.

OFFICE AND SHOWROOMS:
606 Arch Street, - PHILADELPHIA.



THE
RUTH RIBBER

For All Kinds of

HOSIERY AND UNDERWEAR

Entire New Design Ribber.
Protected by Patents
granted and others pending.

Excels in Quality of Fabric and Ease of Operation, Simplicity and Durability.

COSTS LESS MONEY.
GIVES GREATER PRODUCTION

Absolute Guarantee With Each Machine.

Correspondence Solicited.

RUTH AUTOMATIC KNITTING MACHINE CO.
NORRISTOWN, PENN.

G. W. RUTH, Manager.

This little line represents our Weekly Production in 1892, viz:—75,000 yds.

This long line represents our Weekly production in 1902, viz:—7,500,000 yds.

THE INCREASE IS DUE TO THE FACT
THAT MANUFACTURERS HAVE
LEARNED THAT

FRIEDBERGER

always has the right thing in

EDGINGS

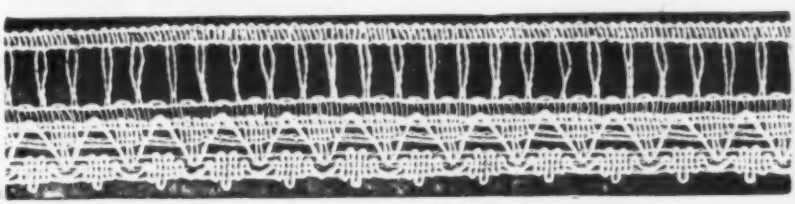
Sold direct only by

THE

Friedberger Mfg. Co.

Mills at Germantown, Philadelphia, Pa.

TELEPHONES, 9042 and 9043.



THE INVINCIBLE,

FULL AUTOMATIC KNITTING MACHINE

For SEAMLESS Hosiery

A BIG PRODUCER.

●

PRACTICAL AND ECONOMICAL IN OPERATION.

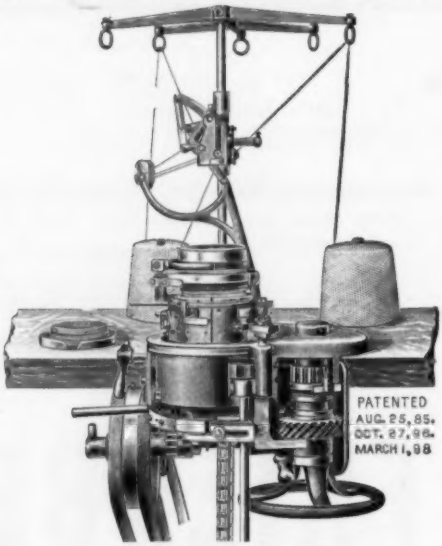
●

NO EXPERIENCE REQUIRED TO TRANSFER RIBBED TOPS BY THE INVINCIBLE METHOD.

●

A MACHINE OF THE HIGHEST GRADE.

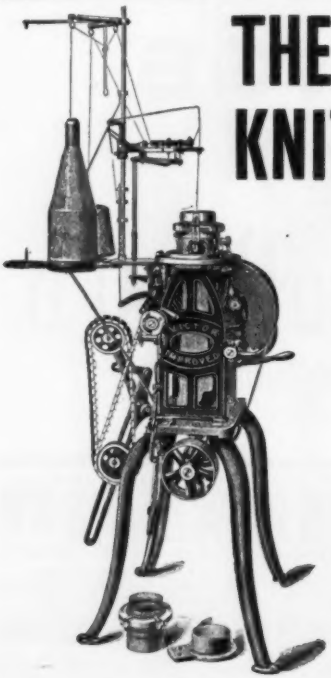
Write for Catalogue.



MANUFACTURED BY...

E. JENCKES MFG. CO.,

Factory and Main Office:
PAWTUCKET, R. I., U. S. A.
Branch Office, Room 370, Bourse Bldg., Phila., Pa



THE "NEW" VICTOR KNITTING MACHINE

A full Automatic Seamless Hosiery Machine. Thoroughly Interchangeable in all its parts. Automatic Two-color Striping Machine, also Black-Leg White-Foot Machine and Lace Machine.

American Knitting Machine Co.

Main Office, Room 5, Knickerbocker Building,
Corner SIXTH & ARCH STS.

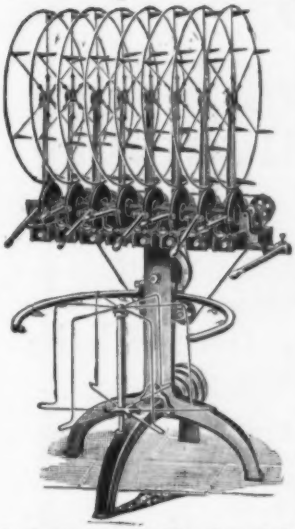
PHILADELPHIA, - - PA.

Southern Branch, Charlotte, North Carolina.
R. M. Oates, Representative.

FACTORY AT WOONSOCKET, R. I.

JAMES TAYLOR,

Knitting Machinery for Hosiery and Underwear



Back-winding Machine for winding the yarn from imperfect pieces back into skeins.

New and Second Hand.

SPECIALTIES IN NEW.

Sole Selling Agent for Stafford & Holt.

UNEXCELLED MACHINERY FOR RIBBED UNDERWEAR,

Sweaters, Bathing Suits, Toques and Specialties, with or without Automatic Stripers and Designers.

These machines have the **only absolutely perfect Take-up Device** Depends neither on springs, friction, ratchet, nor state of weather for its efficiency.

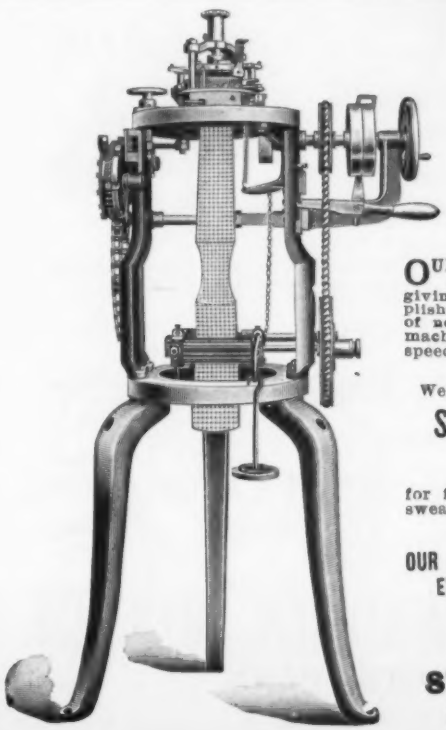
Builder of the **ONLY BACK-WINDING MACHINE** in the market. Ravels and backwinds all classes of Knit Goods, including plated work and fabric made on 8 feed plain or tuck machines.

All inquiries and orders relating to the above machines should be addressed direct to me.

LARGE STOCK IN SECOND HAND.

Everything pertaining to the manufacture of all classes of Knit Goods, for example: Machines for Ribbed and Flat Underwear, Hosiery, Sweaters, Jackets, Mittens, Gloves, Borders, Facing, and Gas Mantles, Buttonhole and Button sewing Machines, Concealed Stitch Welters and Trimmers, Union Specials, Steam Presses, Winders, Ribbers, Sleevers, Loopers, Whizzers, Stop-motions, Cylinders and Dials, Needles, Pins in bulk, Brass Stamps, Stamping Ink, —in short, write us if you are in need of anything, or if you have any Machines for sale.

835 ARCH STREET, PHILADELPHIA, U. S. A.



HIGH SPEED RIB KNITTING MACHINERY.

OUR latest model machinery has been designed to run at **very high speed** giving large production. This is accomplished with fewer seconds, less breakage of needless, less jar and wear and tear on machines than has been customary at lower speeds.

We also make special...

STRIPING AND DESIGNING MACHINES

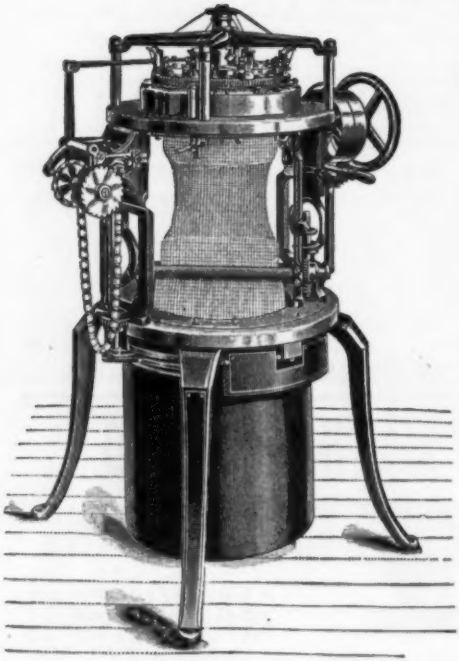
for fancy golf stockings, bathing suits, sweaters, toques, toboggan caps, skirts, etc.

OUR MACHINERY ENABLES MANUFACTURERS TO "LEAD THE PROCESSION" INSTEAD OF STUMBLING ALONG WITH THE CROWD.

STAFFORD & HOLT,
LITTLE FALLS, N. Y.

McMICHAEL & WILDMAN MFG. CO.

Rib Knitting Machinery



Automatic and Plain

For all classes of RIBBED HOSIERY and UNDERWEAR, COMBINATION SUITS, SWEATERS, Etc.

ESTABLISHED REPUTATION FOR

Largest Production,
Best Quality Fabric,
Durability,
Economy of Operation.

Full Particulars, Descriptions and Samples furnished upon application to the

McMICHAEL & WILDMAN MFG. CO.

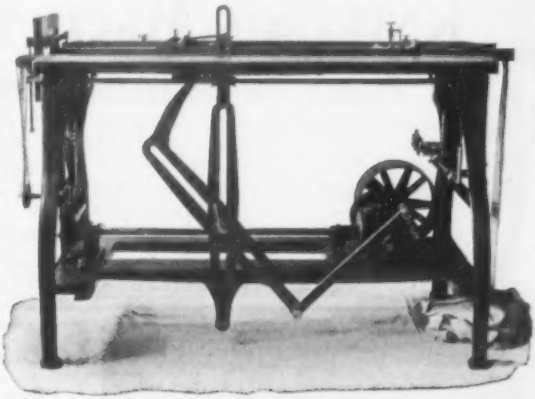
NORRISTOWN, PENN.

Adams Rib and Top Cutting Machine

FULLY AUTOMATIC.

Cuts all Fabrics with or without Welts Perfect Clean Work. Requires no Trimming after passing through machine.

Solidity Simplicity. Absolute Positive Movements. Best Materials.

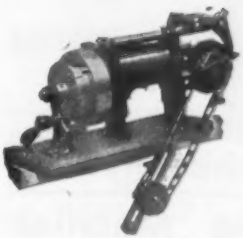


Cutting and Working Parts Hardened Steel. Easy Running.

Saving of Labor and Goods 1,500 Dozen Cuts per Day by one Operator. False Welts cut out automatically. Can be operated by a boy or girl. Accidents impossible. No Special Attachments. Patented in the U. S. A., Europe and America.

SOLE MANUFACTURERS AND AGENTS FOR U. S. A.,

McMichael & Wildman Manufacturing Co., Norristown, Pa



UNDERWEAR MANUFACTURERS!

Write for particulars about my new

AUTOMATIC FOLDING and CUTTING MACHINE.

Cheapest and best in the market.

J. C. GOODWIN, 2nd and Diamond Sts., PHILA., PA.

THE LAMB

LEADER OF KNITTERS

ORIGINAL and BEST
PARTS INTERCHANGABLE
EASILY and QUICKLY OBTAINED

Hosiery and Sweater
Cardigan Jacket
Automatic Racked Border
Full Fashioned Union Suit

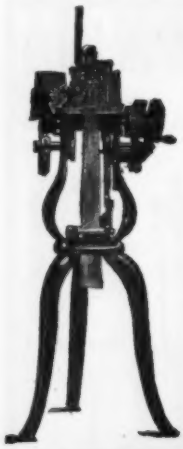
MACHINES

LAMB KNITTING MACHINE CO.,

CHICOPEE FALLS, - - MASS.

J. E. WOODHEAD, 100 22nd Street, CHICAGO.

L. D. SANBORN, 505 Wool Exchange, NEW YORK.



PEPPER MACHINE WORKS

LAKEPORT, N. H.

Successors to PEPPER MANUFACTURING CO.

MANUFACTURERS OF

KNITTING MACHINERY,

INCLUDING

Pepper's Flat Ribbed Cuff Machines,

Automatic Welt and Loose Course Machines for Stock Tops. New Circular Stripers with Welt, Loose Course and Striping (Automatic), for Short Cuffs, Sock Tops, Hose Legs, Wristers, etc.

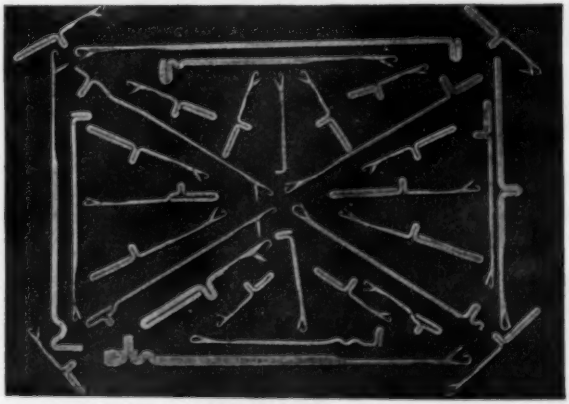
GOLF AND BICYCLE STOCKING MACHINES,

ALL KINDS OF

CIRCULAR RIBBED MACHINES,

For Men's Underwear, Ladies' and Misses' Hose Legs and Leggins.

CORRESPONDENCE SOLICITED.



LATCH

Needles for all

Knitting Machines

OUR

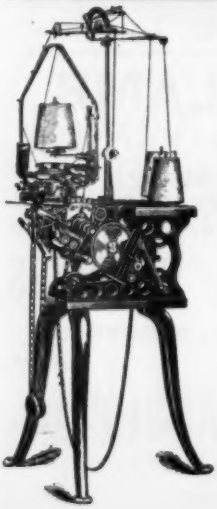
SUPERIOR

OR

Sunken Rivet Head Needles

will save you money every day in the year.

DODGE NEEDLE CO., Manchester, N.H.



Excelsior Knitting Machine Manufacturing Co.,

BUILDERS OF

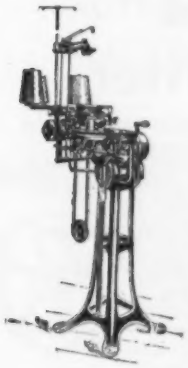
Knitting Machinery

Two-Feed 7-8 Automatic for Ladies String Work, also Black Legs with White Feet.

Regular 7-8 Automatic for all classes of Cotton Hose. Special 3-4 Automatic for Wool.

Excelsior Knitting Machine Mfg. Co.

ALLENTOWN, PA , U. S. A.

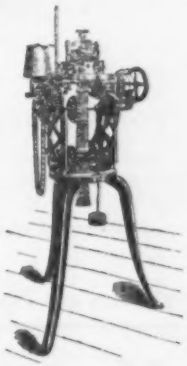


H. BRINTON & CO.,

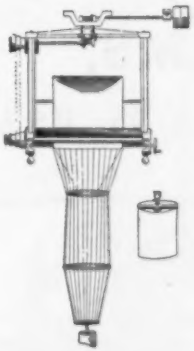
213-215 Race Street,
Philadelphia, Pa.

BUILDERS OF

Full Automatic Seamless and Ribbed



Knitting Machinery.



TO MANUFACTURERS.

I want you to try the Johnston Patent Vertical Dryer. Four claims which have all been demonstrated, have proved it to be the Most Economical in Cost of Labor, Doing the Most Work, The Best Work, Occupying the Least Room of Any Dryer now made for Tubular Goods.

Sole Owner and Manufacturer

E. M. ANTISDEL,

20 Broad St., UTICA, N. Y.

LEWIS JONES,

60½ and Media Sts, Philadelphia

GAS ENGINES for city or country.
BRUSHING MACHINERY
KNITTING MACHINERY

EFFICIENT
DURABLE
LOW IN PRICE.

WILFRED WELLS,

SOLE MANUFACTURER OF THE

CHAMPION HOSIERY STAMP.

PATENTED JANUARY 7, 1896.

The only Perfect Stamp for Hosiery, Underwear and all Woven Fabrics.

Blocks for Printing Hosiery.

505 W. LEHIGH AVE., PHILA., PA.

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

JOS. T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA.

PAXTON & O'NEILL'S

3-4 Automatic Knitter

FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.

Has the preference wherever used over 7-8 and full automatics. Because it makes as much or more goods and better goods. Costs less for repairs. Gives less trouble to fixers Range on Half Hose, from the coarsest to 220 needle.

Exclusive rights to Brown's ATTACHMENTS FOR LACE EFFECT.

127 Bread Street, Phila.

Cylinders and Dials for all size machines.

Knitting Machinery

SCOTT & WILLIAMS,

2079 E. Cumberland St., Philadelphia, Pa., U.S.A.

WRITE FOR CATALOGUE.

BRANSON MACHINE CO.

506 N. American St., PHILADELPHIA, PA., Pioneer Builders of

Knitting - Machinery

FOR SEAMLESS HOSIERY.

Estimates for Plants Complete.

Write for information and catalogue.

KENNEDY'S KORRECT KUTTERS

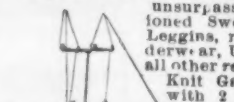
THE VERY BEST

For Bands, Stays and Facings, Suspender Straps, Gassets, Drawer Bands, Pockets, Shields, etc.

THOS. KENNEDY, Cohoes, N. Y.

Our New Improved Light-Running Short Carriage

KNITTING MACHINE

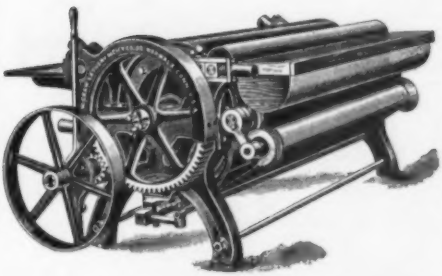


unsurpassed for full-fashioned Sweaters, Jackets, Leggins, regular Knit Underwear, Union Suits, and all other *regular* and *selvage* Knit Garments. Made with 2 complete yarn-carriers and 2 color striping attachment and has the new combined Sweater Stitch Drop Lock and Tubular Lock. Special Glove Machines. Finger Knitting Machines 3 inches width of needle bed. Rapid 2-thread Lock stitch Overseamers.

ARTHUR MUELLER,

780 Madison St. cor Patchen Ave., Br'lyn, N.Y.

AUTOMATIC IRONING AND PRESSING MACHINE FOR KNIT GOODS.



This machine irons and presses ribbed and flat underwear, giving a fine smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

J. W. CRAW LAUNDRY MACHINERY CO.,

SOUTH NORWALK, CONN.

THE MURPHY

High Speed, Elastic Stitch Sewing Machines for Finishing Knit Underwear and Hosiery.

High Speed, Double Thread Machine, with or without Trimmer, for Knit Underwear.

High Speed, Double Thread, Concealed Welting or Hemming Machine for Hosiery.

High Speed, Single Thread, Chain Stitch Machine with Hardened Parts.

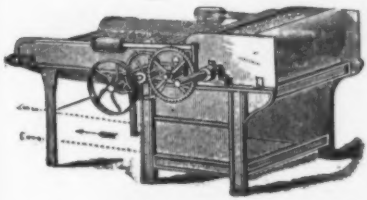
Also High Speed Overedge Seaming and Welting Machines.

KRUSE & MURPHY MFG. CO.,
455-457 West 26th Street, NEW YORK

GEO. GERRY & SON,

ATHOL, MASS.

Manufacturers of



LUMPERS

WOOL and WASTE DUSTERS,
RAG DUSTERS, NAPPERS,
Improved
CLOTH MEASURING MACHINES

Lumper and Duster Cylinders Refilled and Repaired.

CRANE MFG CO
LAKEPORT, N. H.

Spring Needle Circular Knitting Machine

For Hosiery, Shirts, Drawers, Jersey Cloth and Stockinet.

A Specialty of Hardened Bladed Burr Wheels with Self-Oiling Brackets.

Celebrated Brand PYRAMID TRADE MARK **Lacings**

For Underwear, Overshirts and Sweaters,

JOHN CATHCART & CO.,
115 Franklin St., New York.

TRADE MARK.

Business est. in 1859.

WILLCOX & GIBBS

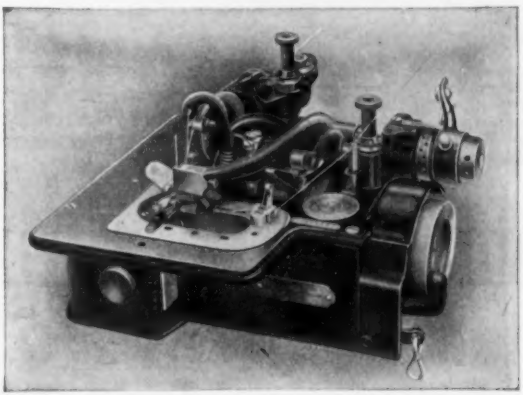
"OVERLOCK" MACHINE.

(TRADE MARK.) (Pat. Apr. 5, 1892.)
(Patent twice upheld by U. S. Court of Appeals.)

For TRIMMING, SEAMING, and OVEREDGING (or HEMMING) KNIT UNDERWEAR.

3,000 STITCHES PER MINUTE

12 to 20 STITCHES PER INCH

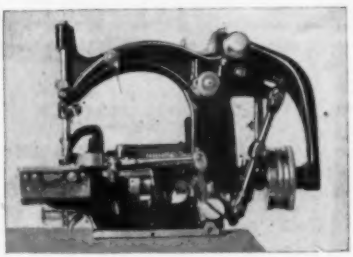


The "Overlock" Elastic Stitch is equal to the full stretch of the Goods

WILLCOX & GIBBS SEWING MACHINE CO.,
658 BROADWAY, NEW YORK CITY.
LONDON PARIS MILAN DRESDEN

THE ARNOLD SEWING MACHINE CO.

216 High Street, Newark, New Jersey.



Overedge Welting Machine, with Trimmer.
The very best in the market.
(No royalty.)

Overedge Seaming Machine, with Trimmer.
3000 stitches per minute.
(No royalty.)

Overedge Sewing Machine, without Trimmer.
For manufacturers of knit goods and other fabrics, with or without trimmers.

Our claims are SIMPLICITY,
DURABILITY,
ACCESSIBILITY,

Every part of our machine being readily accessible.
This machine has 100 less parts than any other overedge machine.

THE CHEAPEST AND BEST METHOD

—OF:—

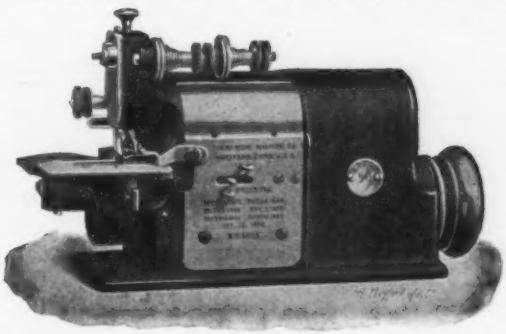
FINISHING RIBBED KNIT GOODS

IS BY THE USE OF

Our High Speed Machines.

Blankets, Skirts or Cotton Goods,

requiring a useful and Ornamental Finish, should be finished by some of our various machines adapted for special purposes and finishes.



Send for Catalogue and Samples, stating the kind of goods to be finished.

THE MERROW MACHINE CO.,

346 Broadway, New York. **Hartford, Conn.** Bourse Building, Philadelphia.

Single "Interlock" Machine

(Trade Mark.)

FOR OVEREDGING, HEMMING AND SEAMING.

Especially Adapted to UNDERWEAR AND HOSIERY.

Class 12900.

Elastic Seam, Hem or Edge Finish.

High Speed.

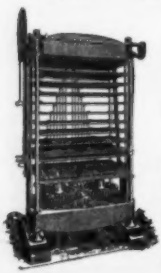
75 Kinzie St., Chicago.
47 Leonard St., New York.
228 Market St., Phila.
96 South St., Boston.
12 Church St., Amsterdam, N. Y.
60 Mohawk St., Cohoes, N.Y
708 Main St., Cincinnati.
1230 Olive St., St. Louis.

Union Special Sewing Machine Co.

THE CRAWFORD

HOLLOW STEAM

Plate Press



For Knit or Woolen Goods.

The most reliable machine of the kind on the market.

Press Papers & Fenders

SPENCE & RIDEOUT,
Successors to
J. J. CRAWFORD & SON,
Nashua, N. H.

W. J. Von Buchwald,

120 NO. 7th ST., PHILADELPHIA, PA.

Agent for the

Murphy High Speed

DOUBLE THREAD,
ELASTIC STITCH,
SEAM TRIMMING and
CONCEALED WELTING

Machine,

FOR HOSIERY AND UNDERWEAR.

Trimmers put on all Makes of Machines.

Correspondence Solicited.

A NEW TRIMMING DEVICE

FOR UNION BUTTON SEWING MACHINES.

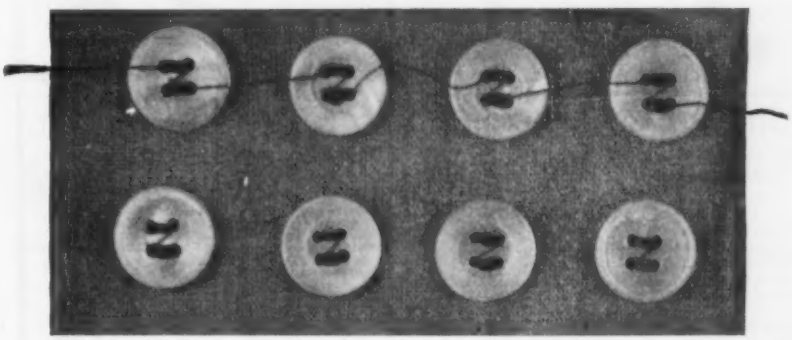
The new Thread Trimming Device trims both upper and lower threads, leaves the stitching on top of the button with a smooth finish, without any ragged ends, secures the ends of both threads, makes next stitch perfect.

CAN BE APPLIED TO EVERY UNION BUTTON SEWING MACHINE.

Write for full particulars to

THE UNION BUTTON SEWING MACHINE CO.,

164 High St., Boston, Mass.



Upper row shows buttons sewed on by Union Machine *without* the Thread Trimming Device. Lower row shows buttons sewed on by Union Machine with Thread Trimming Device attached.

CHARLES COOPER, BENNINCTON, VT.,

KNITTING MACHINE AND NEEDLE WORKS,

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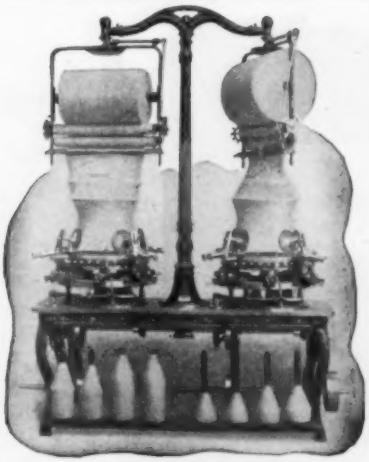
Flat Rib Knitting Machines, 2 to 5 sections, Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Collarette Attachments, etc., etc. All the latest improvements. Sinkers and all Rib Machinery supplies. Patent Springs for Dyeing Boards. Also Ribbed Anklets made to order. Branch Shop, AMSTERDAM, N. Y.



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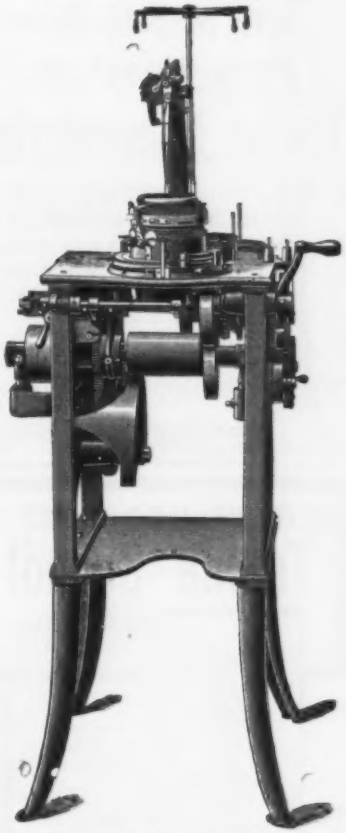

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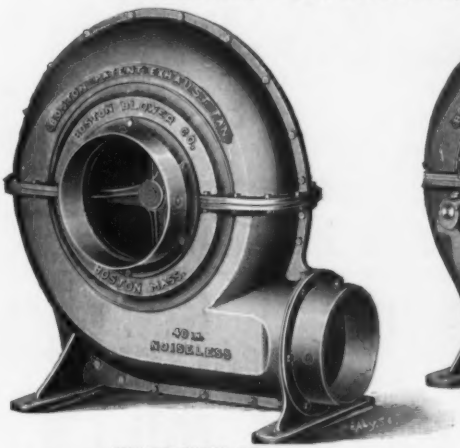
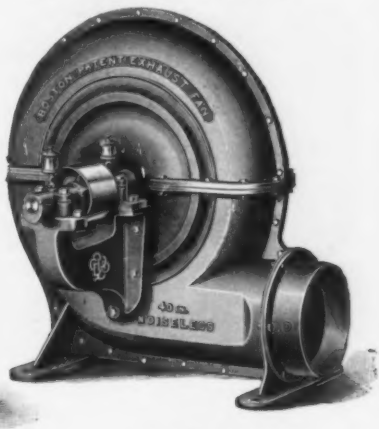
As used in Connection with Pneumatic Conveyor System for Handling Wool, Cotton, Rags, Excelsior, Jute, Etc.



INLET SIDE OF RIGHT HAND WOOL EXHAUSTER.



PULLEY SIDE OF LEFT HAND WOOL EXHAUSTER.

This machine is similar in design to the regular Boston Patent Exhaust Fan, but is fitted with a special wheel for handling fibrous materials, and the top is removable.

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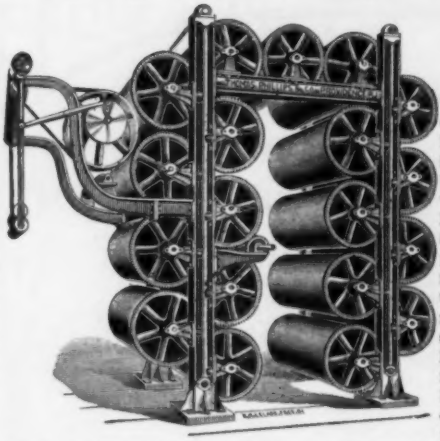

Phillips Upright Drying Machine.

The cut shows a 19-can machine with two tiers with intermediate can for continuous drying. We build any arrangement of stringing and furnish any desired number of cans, of any length, either with Phillips Steel Head or Cast Iron. We strongly advise our Steel Head Can. It is a big improvement as eight years' experience has demonstrated. This upright machine enables cloth to run without wide intermediate spaces between the tiers, as in horizontal machine, thus avoiding "scrimps." We also build Horizontal Frames, but on radically different principles from most others. Our illustrated catalogue explains all these points at length and has many plates showing different styles of stringing. It may be had for the asking.

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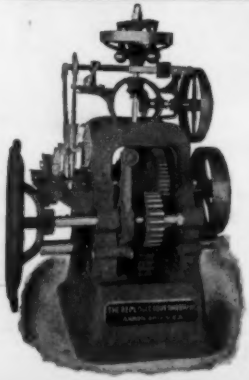

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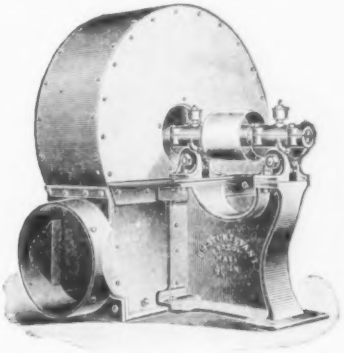

It increases the output and prevents condensation.

Applicable to old or new plants.

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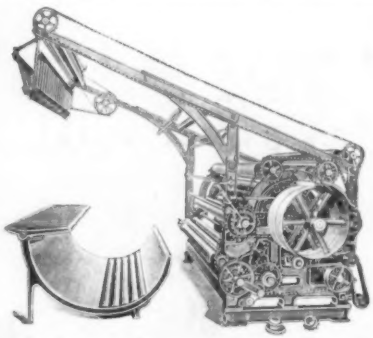

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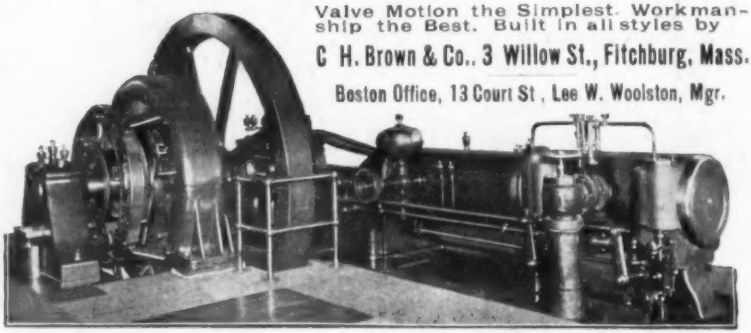

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